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THE CREATIVE PROCESS

A Symposium

Brewster Ghiselin



A MENTOR BOOK

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To JON and MICHAEL
—and, as an afterthought,
to the man from Porlock

PREFATORY NOTE

SOME of the selections in this anthology are intact, some are excerpts drawn from contexts of less pertinent material, and some have been more or less reduced by excisions, mainly as a means of conserving space but sometimes in order to remove material not essential to the purpose of this book. Omission of material has been indicated by use of ellipsis periods in the text. In editing such passages, it has not always been possible to preserve the full esthetic integrity of the original, but utmost care has been exercised in preserving the import.

B.G.

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INTRODUCTION

INTEREST in the creative process is not exactly a new development. A story told of the working habits of Euripides may be apocryphal; but both Plato and Aristotle had something to say of the creative process, and from time to time during the next two thousand years other writers touched upon it. Early in the nineteenth century interest in it increased. Blake, Wordsworth, Coleridge, Shelley, and Keats all had their say. Poe's "Philosophy of Composition" became an incitement to further attention. Interest in the subject is still growing.

Besides a good deal of objective discussion of the creative process, chiefly by philosophers, psychologists, and other scientists, a large amount of comment and description of individual processes and insights has accumulated, most of it fragmentary, some of it not perfectly reliable. Among these materials the most illuminating and entertaining are the more full and systematic descriptions of invention and the reflections upon it made by the men and women most in position to observe and understand, the thinkers and artists themselves. Perhaps the greatest body of such writing is the monumental work of Henry James, the prefaces to the New York edition of his work.

Some of the reasons for attention to the creative process are practical. One incentive for compiling this anthology, a selection of some of the more revealing discussions of invention, is that insight into the processes of invention can increase the efficiency of almost any developed and active intelligence. Not even the most vigorously creative minds always find their way quickly to efficiency. Yet many creative workers have little knowledge of the pertinent materials and would not know where to look for them. Some of the richest and most useful are scattered and out-of-the-way. There is, moreover, no large collection of statements about the creative process that is much more than a compendium of fragments. It has therefore seemed worth while to bring together some of the longer and more complete source materials, exhibiting a fairly full range of methods in the various fields of activity. Having read through such a selection of writings one will not simply have observed the fundamentals, which are all but inescapable. One should have acquired a sense of the bearing of these fundamentals, a feeling for the whole process, and a lively sense of the divergencies of individual approach and procedure.

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Today, when widespread, deep, and rapid changes are taking place in the very structure of our lives, whether we desire it or not, and when still other changes seem necessary to preserve us from disaster, understanding of the creative process is particularly important because it can assist in the control of these difficult developments. The creative process is the process of change, of development, of evolution, in the organization of subjective life. The inventive minds through whose activity that evolution has been initiated and in large part accomplished have usually been the only ones much concerned with it. Their efforts have rarely been sustained by society, and have sometimes even been hindered. There is little comfort in reflecting that vital change has gone on despite all opposition or indifference, that the work of Galileo was done and put to use in spite of obstruction and that Bartok composed a great deal of music while enduring the neglect that left him in sickening poverty. There is no way of estimating how much the development of humanity has been lamed by such delay and waste. Simply the self-interest of mankind calls for a more general effort to foster the invention of life. And that effort can be guided intelligently only by insight into the nature of the creative process. Understanding the activities of those who supply the needs of life, both their own and others', by defining some fresh organization of subjective processes, we may help them to get their work done. Opening our minds to their insights and putting them to what use they may have, we may assist in the creative process, which completes itself only as the products of invention transform the environment the inventor breathes.

The human mind is prepared to wrap the whole planet in a shroud, and the exercise of all our best effort and ingenuity has produced no assurance whatever that it will be deterred from that end. The prolonged failure of traditional means in dealing with this problem does not prove those means useless. It does strongly suggest their inadequacy. For, as knowledge of the creative process drives us to conclude, although a problem which stubbornly resists solution by traditional means may perhaps be insoluble, the probability is rather that those means are themselves inadequate: the concepts, attitudes, and procedures employed are probably at fault and in need of being transcended in a fresh approach. The only reasonable step, at this point, then, is to act upon the supposition that our problems in world crisis, as at other times, may be soluble only creatively—that is, by a profound and thorough alteration of our inner life and of the outer forms in which life finds expression and support. Certainly some changes are requisite. The necessary change, if it comes at all, may have to be so quick and sharp an evolution as to seem revolutionary. If it does not

come soon, if the limiting forms of our consciousness, the sometimes too-rigid patterns of current thought and feeling, are not shaped quickly to meet the needs of life, there is grave danger that they will simply continue to possess us until too late.

One might suppose it easy to detect creative talent and to recognize creative impulse and creative work. But the difficulties are considerable. Because every creative act overpasses the established order in some way and in some degree, it is likely at first to appear eccentric to most men. An inventor ordinarily must begin in isolation and draw the group to himself only as it is discovered, sometimes very slowly, that he has invented some part of what they are in need of. At the beginning of his struggle for realization his originality may achieve no more striking manifestation than an extreme dissatisfaction with established order.

Vincent van Gogh must have felt some such dissatisfaction when in 1880 he wrote to his brother Theo about his feeling that he was one of those men who are somehow mysteriously imprisoned, "prisoners in an I-don't-know-what-for horrible, horrible, utterly horrible cage." As we know, the trouble was not that van Gogh was incapable of action. It was rather that he had not found that expression of his impulses which would satisfy him. He writes further of "the man who is doomed to remain idle, whose heart is eaten out by an anguish for work, but who does nothing because it is impossible for him to do anything, because he is as it were imprisoned in something. Because he hasn't got just that which he needs in order to be creative. Because the fate of circumstances has reduced him to a state of nothingness. Such a man often doesn't know himself what he might do, but he feels instinctively: yet am I good for something, yet am I aware of some reason for existing! I know that I might be a totally different man! How then can I be useful, how can I be of service! Something is alive in me: what can it be!"

How are we to differentiate this expression of the artist's sense of his unrealized possibilities from the petulance of incapacity dissatisfied with its lot? There seems no immediate way to do so. The criterion is the proof of production by the artist, if he is able to find himself. But I suspect that he does not always find himself, that he may look in the end like nothing more than an ineffectual misfit.

Van Gogh's uncertainty as to what he might be is typical. The inventor, whether artist or thinker, creates the structure of his psychic life by means of his works. As C. G. Jung remarks: "The work in process becomes the poet's fate and determines his psychic development. It is not Goethe who creates *Faust*, but *Faust* which creates Goethe." Yet it is only as the

work is done that the meaning of the creative effort can appear and that the development of the artist brought about by it is attained. This is why the creative urge may be at first so extremely vague as hardly to identify itself. The terms of its expression are not to be found in the world, but must be invented: the simplest terms of the new order have yet to be discovered and made explicit.

Even to the creator himself, the earliest effort may seem to involve a commerce with disorder. For the creative order, which is an extension of life, is not an elaboration of the established, but a movement beyond the established, or at the least a reorganization of it and often of elements not included in it. The first need is therefore to transcend the old order. Before any new order can be defined, the absolute power of the established, the hold upon us of what we know and are, must be broken. New life comes always from outside our world, as we commonly conceive that world. This is the reason why, in order to invent, one must yield to the indeterminate within him, or, more precisely, to certain ill-defined impulses which seem to be of the very texture of the ungoverned fullness which John Livingston Lowes calls "the surging chaos of the unexpressed."

Chaos and disorder are perhaps the wrong terms for that indeterminate fullness and activity of the inner life. For it is organic, dynamic, full of tension and tendency. What is absent from it, except in the decisive act of creation, is determination, fixity, any commitment to one resolution or another of the whole complex of its tensions. It is a working sea of indecision, like the soul of a woman making up her mind. But if it were altogether without order of some kind it would be without life.

Creation begins typically with a vague, even a confused excitement, some sort of yearning, hunch, or other preverbal intimation of approaching or potential resolution. Stephen Spender's expression is exact: "a dim cloud of an idea which I feel must be condensed into a shower of words." Alfred North Whitehead speaks of "the state of imaginative muddled suspense which precedes successful inductive generalization," and there is much other testimony to the same effect.

In some invention there is consciousness of a stage yet more primitive, a condition of complete indecision—in the words of Isadora Duncan, "a state of complete suspense"—in which nothing tends toward determination, nothing of a particular character seems to be implied, in which, therefore, all is still apparently free. It is alike for thinker and artist the offering of adventure, but adventure nameless and featureless, which shall be defined by something not even in the periphery of consciousness, but rather implicit in the whole spread of the sub-

jective life. This state in no way involves or suggests irresolution. Paradoxically it often appears as an enhancement of certainty. It is as if the mind delivered from preoccupation with particulars were given into secure possession of its whole substance and activity. This yielding to the oceanic consciousness may be a distracting delight, which as Jacques Maritain has pointed out can divert the worker from formal achievement. In this extreme the experience verges upon the religious; but it is rarely so intense or so pure, and, when it is, it is not often so enduring a preoccupation as to constitute a real threat to performance. More often it defines itself as no more than a sense of self-surrender to an inward necessity inherent in something larger than the ego and taking precedence over the established order.

Frequently the creative worker experiences first neither this sheer readiness for the new nor that vague presentiment of some novel development felt to be specific but as yet undefined. The invention may appear spontaneously and without apparent preliminaries, sometimes in the form of a mere glimpse serving as a clue, or like a germ to be developed; sometimes a fragment of the whole, whether rudimentary and requiring to be worked into shape or already in its final form; sometimes essentially complete, though needing expansion, verification, or the like. The mathematician Jacques Hadamard records that "On being very abruptly awakened by an external noise, a solution long searched for appeared to me at once without the slightest instant of reflection on my part—the fact was remarkable enough to have struck me unforgettably—and in a quite different direction from any of those which I had previously tried to follow." Spontaneous appearance of inventions very fully formed is not extremely rare, but it is by no means ordinary. Spontaneity is common, but what is given is usually far from complete. Commonly the new element appears simultaneously with some such vague intimation of further development as I have described.

Production by a process of purely conscious calculation seems never to occur. Though Poe laid claim to it, his singular testimony is not enough to establish it as a fact. It cannot and ought not to be rejected as impossible, but it does not fit the facts reported almost universally and in every field of creative work. Not only Shelley, Blake, Ernst, Henry James and many other artists of great note or of little have described some considerable part of their invention as entirely spontaneous and involuntary—that is, as automatic. Invention automatic in this sense is claimed also by a variety of intellectual workers, such as Spencer, Nietzsche, Sir W. Rowan Hamilton, C. F. Gauss. More or less of such automatism is reported by nearly every worker who has much to say about his processes, and no

creative process has been demonstrated to be wholly free from it.

Anton Chekhov has insisted that only a lunatic would create quite automatically: ". . . to deny that artistic creation involves problems and purposes would be to admit that an artist creates without premeditation, without design, under a spell. Therefore if an artist boasted to me of having written a story without a previously settled design, but by inspiration, I should call him a lunatic." But this is rather a protest against the view that completely automatic production is normal than an attempt to rule out all automatism whatever in normal invention.

Automatism appears to be fundamental in the activity which Henri Poincaré observed on the notable occasion when having drunk coffee he lay unable to sleep and became a spectator of some ordinarily hidden aspects of his own spontaneous creative activity: "Ideas rose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination. By the next morning I had established the existence of a class of Fuchsian functions, those which come from the hypergeometric series; I had only to write out the results, which took but a few hours." Though Poincaré was conscious, he did not assume direction of his creative activity at the stage described; and as it seems to have been a sort of activity not susceptible of conscious control, apparently he could not have done so. If he is right in supposing that what he witnessed was typical of processes ordinarily subliminal, then some part of his creative process—a classical example—was automatic.

Another worker likewise of highly developed intellect, but in another field, has reported somewhat similar observations of automatic production going on under the fully wakeful eye of consciousness. In his preface to *The Ambassadors* Henry James records some conscious production so smooth and inevitable as to suggest an unconscious, wholly automatic development if consciousness had not fully operated: ". . . the steps, for my fable, placed themselves with a prompt and, as it were, functional assurance—an air quite as of readiness to have dispensed with logic had I been in fact too stupid for my clue." That much did happen quite automatically, though with the assent of his judgment, becomes apparent as he continues: "Never, positively, none the less, as the links multiplied, had I felt less stupid than for the determination of poor Strether's errand and for the apprehension of his issue. These things continued to fall together, as by the neat action of their own weight and form, even while their commentator scratched his head about them; he easily sees now that they were always well in advance of him. As the case completed itself he had in fact, from a good way behind, to catch up with them, breathless and a little flurried, as he best could."

From this account of spontaneous and involuntary production in a state of heightened awareness, it would appear that automatic invention, far from being a sign of diminished, imperfectly functioning consciousness, is a healthy activity supplementary to conscious invention and in no way inconsistent with it. The automatic functioning in invention is, rather than an inferior or suspect substitute (or an exalted one), an extension of activity beyond the limited scope of that which is shaped by insight, the conscious activity, which is an observant adjustment of exactly appreciated means to known ends. Something beyond that fully observable conscious construction takes place, to the advantage of consciousness, or of the consciousness able to make use of it.

The notion that automatic and conscious production are somehow opposed is not altogether groundless, however. The constructive nature of the automatic functioning argues the existence of an activity analogous to consciousness though hidden from observation, and we have therefore termed it *unconscious*. The negative prefix suggests an opposition, but it is no more than verbal, not any sort of hostility or incompatibility being implied by it, but simply the absence of consciousness. Yet a real opposition between the conscious and the unconscious activity does subsist in the limitations which the former tends to impose on the latter. The established possessions of consciousness have a way of persisting, particularly when they are part of a scheme, and of determining behavior, including a large part of that which is unconscious or imperfectly conscious. If this were not so our psychic lives would of course have little stability.

But this conservative tendency hinders the introduction of anything fundamentally new. The first impulse toward new order in the psychic life is therefore, as it must be, an impulse away from the clearly determined, from all that is most easily attended to and that most forcefully imprints itself upon the attention. That is, it is an impulse away from the conscious activity already in motion or potential, which would simply reduce it to itself. In the sense of this aversion, it is an impulse toward unconsciousness. This is the real opposition to which I have referred, this reaction against one another of the old order which is more or less readily realizable in the focus of attention and the potential new order developing, and often competing against it, in obscurity. It is not the two activities which are opposed, the conscious and the unconscious, but the principles acting in them.

The opposition is often dramatized in objective situations, as when van Gogh agonizes in a morbid inactivity because none of the current ways of expression can give issue to the

nameless life within him for which he has not yet found a path. As long as he tries to move in the old ways, he is frustrated. For the emphasis of desire falls upon the unrealized rather than on the explicit elements in his psychic life.

Even when an artist has found his way, the opposition between the new and the old persists, for the unrealized continues to draw him. This is true also of the scientist and creative man of action, of all inventors, who may be said to be a restless group. It has been pointed out by Jacques Hadamard that the more vigorous creative minds among the scientists are often inclined to drop a project when the less inventive begin to swarm upon it, and to go on to something fresh. Artists do this too. So Ezra Pound abandoned Imagism and other movements. Pablo Picasso creates movements but does not lead them.

The nature of this restlessness is well defined by Thomas Mann near the end of the meditations which introduce his story of Joseph: "As for me, who now draw my narrative to a close, to plunge, voluntarily, into limitless adventure (the word 'plunge' being used advisedly), I will not conceal my native and comprehensive understanding of the old man's restless unease and dislike of any fixed habitation. For do I not know the feeling? To me too has not unrest been ordained, have not I too been endowed with a heart which knoweth not repose? The story-teller's star—is it not the moon, lord of the road, the wanderer, who moves in his stations, one after another, freeing himself from each? For the story-teller makes many a station, roving and relating, but pauses only tentwise, awaiting further directions, and soon feels his heart beating high, partly with desire, partly too from fear and anguish of the flesh, but in any case as a sign that he must take the road, towards fresh adventures which are to be painstakingly lived through, down to their remotest details, according to the restless spirit's will."

The restlessness of the inventor is unending because he is an adept in realization, he has an inordinate appetite for discovery and the ability to satisfy it. He is often a specialist, with less psychic inertia than the average man, and, sometimes, with less stability. But he is not inclined, as some imagine, to mere wandering, to dizzy excursions away from the determinate. He is not a tramp. He is drawn by the unrealized toward realization. His job is, as Wordsworth says, "the widening the sphere of human sensibility. . . . the introduction of a new element into the intellectual universe." He works toward clarification, toward consciousness. That opposition between the conscious and the unconscious activities in creation which we have noticed is only superficial, or rather is only initial. The new order which creation is concerned with has an affinity for consciousness.

But because any new movement of the psychic life can find

its freedom only outside consciousness, or at least in some degree of dissociation from consciousness, it has always at first the aspect of adventurous departure from the known, in so far as it has any aspects of which we can be aware, in so far as it is not altogether subliminal. This casting loose the ties of security requires courage and understanding. It requires some courage to move alone, often counter to popular prepossessions, and toward uncertainties. And to move free of the established requires the understanding that the established is not absolute, but is only the instrumentality of life, is justified only by the service it renders to life, and has no meaning apart from vital needs.

The faithful formalist has no chance of creating anything. Hence a certain amount of eccentricity, some excess, taint, or "tykeishness" is often prized by creative minds as a guarantee of ability to move apart or aside, outside. Drugs or alcohol are sometimes used to produce abnormal states to the same end of disrupting the habitual set of the mind, but they are of dubious value, apart from the dangers of addiction, since their action reduces judgment, and the activities they provoke are hallucinatory rather than illuminating. What is needed is control and direction.

For the desirable end is not the refreshment of escape into whatever novelty may chance to offer or impose itself, but the discovery of some novelty needed to augment or supplant the existing possessions of the mind. This is as true of invention in the arts and in pure science as it is of the so-called practical inventions the immediate use of which escapes no one. It is not always so obvious. A familiar example is furnished by the Romantic movement at about the beginning of the nineteenth century, which appeared to the unsympathetic to be something like an hysterical experiment in self-indulgence, the eccentricity of an ill-balanced, undisciplined, irresponsible crew. Some still incline to this view, but their perspective appears to be special. To others it seems clear that the movement was a vital corrective. It was a turn toward balance and wholeness, largely through resumption of interest in the particular, the individual elements of the inner and the outer life in all their variety and range. It admitted to the mind a flood of stimulating and nourishing experience that had been excluded, and it allowed a fresh examination of reality and fresh formulation of meaning and assignment of values.

In a very narrow sense, the charges brought against these initiators are valid; the Romantics *were* eccentric, undisciplined, and irresponsible. Certainly they were not centered upon the established order of life. They were, however, centered upon another order which they were striving to realize. Obviously they were not disciplined to sustain the established,

because they would not submit to be; but they disciplined themselves to find and elaborate an order fit to supplant it. And they were not responsible to intrenched interests; yet in working and suffering to foster emergent ones, they proved their deep responsibility to life. What they achieved has been found to have, besides the novelty incidental to all invention, the specific kind of usefulness which was the consequence of their striving successfully toward a particular end.

Likewise in pure science the end is not novelty, but use. Neither in art nor in science is the use always anticipated. Application of a scientific truth to narrowly practical purposes may even never occur, and it often follows long after the discovery. But it is evident that in both art and science the inventor is to some degree incited and guided by a sense of value in the end sought, something very much like an intimation of usefulness. Jacques Hadamard has pointed out that although when the Greeks studied the ellipse they could not find any use for its properties which they discovered, their work was the necessary preliminary for some of the most important discoveries of Kepler and Newton. And he asserts on the authority of his own analogous experience that they were guided by esthetic feeling in their selection of the ellipse rather than some less fruitful matter. Other mathematicians have insisted on the importance of esthetic emotion as a guide in mathematical invention, among them Henri Poincaré, who has stated that what serves to bring certain ones (only the most useful) of all the teeming unconscious elements into the focus of the mathematician's attention is their power to affect his esthetic sensibility. In thus emphasizing the creative worker's dependence on affective guides rather than on any explicit intellectual process, the mathematicians are in essential agreement with the artists: William Butler Yeats believed that instinct led him to choose one subject rather than another; Willa Cather has said that the deeper sympathies dictate the choice. In all this it is clear that creative minds feel drawn toward specific material with which to work: the creative impulse is no mere appetite for novelty, for it is highly selective. It is so even when governed by no explicit idea of its end. The selection is evidence of an implicit end, however, to the nature of which the emotion is for a time the only clue. It is like the disturbance at the surface of the water which betokens activity beneath.

The end to be reached, then, in any creative process, is not whatever solid or silly issue the ego or accident may decree, but some specific order urged upon the mind by something inherent in its own vital condition of being and perception, yet nowhere in view. The creative process in its unconscious action has often been compared to the growth of a child in the womb. The comparison is a good one, as it nicely communicates the

important fact that the process is an organic development, and it helps to dispel the notion that creation is simply an act of canny calculation governed by wish, will, and expediency. But as the figure suggests a complete automatism, it is inapplicable to a larger part of the creative process; and even in the automatic stages, those termed by Henri Poincaré "unconscious work" and "inspiration," the process is not so unconscious and sure.

The fact is that the mind in creation and in preparation for it nearly always requires some management. Most creative workers pick up what they know about this by trial and error, by casual observation of themselves and others, and from such comment as they may chance upon. The consequences of learning so haphazardly are hard to estimate, but obviously they are not always good. Joseph Conrad suffered from agonizing stoppages of work, Coleridge left masterpieces unfinished. Possibly these artists were hindered by personal defects of the sort that interfere with other activities besides invention, and they may even have been beyond help. Yet it is likely that if Coleridge had only shut the door in the face of the man "from Porlock" who interrupted the composition of "Kubla Khan" he would have been able to continue the writing. But avoiding such fatal interruptions is a minor difficulty, scarcely illustrative of the problems of management. Conrad was able to leave the matter entirely to his wife.

The larger objects of management are two: discovering the clue that suggests the development to be sought, that intimates the creative end to be reached, and assuring a certain and economical movement toward that end. The indispensable condition of success in either stage of production is that freedom from the established schemes of consciousness the importance of which I have already pointed out. It is essential to remember that the creative end is never in full sight at the beginning and that it is brought wholly into view only when the process of creation is completed. It is not to be found by scrutiny of the conscious scene, because it is never there. Yet the necessary step is not retirement altogether from the conscious scene, into a meaningless blackout. Much of the meaning in that scene may survive in succeeding ones, as an essential contribution to their fresh life. What is necessary is to be able to look into the wings where the action is not yet organized, and to feel the importance of what is happening off stage. It may not seem to be much. The young artist is likely to feel that it is nothing, and to go on imitating. Yet it is only there, behind the scenes that are so largely given over to the impressive play of traditional activity, that the new can be prepared. No matter how meager, dull, disorderly, and fragmentary the off-stage action, it must be attended to. For

only on the fringes of consciousness and in the deeper backgrounds into which they fade away is freedom attainable.

We are not usually much aware of this less determinate part of our psychic life, for consciousness is dominated by system, to which we cling. The schematic consciousness is safe, more or less manageable—the tidy and reassuring world of our familiar psychic life. What lies outside is popularly regarded as the concern of alienists, to be noticed only as it becomes disturbing. Out of fear and misunderstanding we incline to minimize it or to disregard it altogether, when we can.

The usual response of intelligent minds confronted with it is beautifully defined in the words of Marlow, Conrad's narrator in *Lord Jim*, who is speaking of a scene of horror: "It had the power to drive me out of my conception of existence, out of that shelter each of us makes for himself to creep under in moments of danger, as a tortoise withdraws within its shell. For a moment I had a view of a world that seemed to wear a vast and dismal aspect of disorder, while, in truth, thanks to our unwearied efforts, it is as sunny an arrangement of small conveniences as the mind of man can conceive. But still—it was only a moment: I went back into my shell directly. One *must*—don't you know?—though I seemed to have lost all my words in the chaos of dark thoughts I had contemplated for a second or two beyond the pale. These came back, too, very soon, for words also belong to the sheltering conception of light and order which is our refuge."

That preverbal experience, in which one loses one's words, opens upon an enormous range and variety of activity. Hypnosis and other procedures such as automatic writing reveal to some degree the richness of what has been called the depths of the mind, in which apparently all the experience of the organism is in some way retained, even an incalculable multitude of experiences that never reach the threshold of awareness at all. This great psychic reservoir is not static like a letter file, or still like a pond. Certain changes evidently go on in it continually. Everyone knows from experience how a memory may alter, not merely fading but suffering distortion. Dreams are another evidence of unconscious developments.

All psychic life is activity, for even the maintenance of the established patterns is a reactivation, with inevitable variations of content and emphasis. But in the unconscious psyche and on the fringes of consciousness, change is easier because there the compulsive and inhibiting effect of system sustained by will and attention is decreased or ceases altogether. Though the system does not dissolve into nothing, it decreases in importance, becomes only an element in the unconscious psychic life, which might therefore be called the nonschematic in contrast to the conscious, which is dominated by system. The

term "nonschematic" is suitable, further, for the unconscious and fringe activity, because much of it is so lacking in apparent organization that it seems altogether chaotic. A great many of the configurations that do appear in the fringes of consciousness are continually shifting because no sign has been found to impose on them the fixed status of a scheme. They slide out of consciousness like the nameless configurations of the rocking ocean. No wonder the image most often chosen for the deeper psychic life is the sea at night.

The image is used among others by John Livingston Lowes in evoking for the readers of *The Road to Xanadu* his sense of the enormous activity out of which the poems of Coleridge were crystallized: "I have left two-thirds of the mass of entries in the Note Book completely untouched. But the whole could not make clearer one fact of profound significance for us. For there, in those bizarre pages, we catch glimpses of the strange and fantastic shapes which haunted the hinterland of Coleridge's brain. Most of them never escaped from their confines into the light of day. Some did, trailing clouds of glory as they came. But those which did not, like the stars of the old astrology, rained none the less their secret influence on nearly everything that Coleridge wrote in his creative prime. 'The Rime of the Ancient Mariner,' 'Christabel,' 'Kubla Kahn,' 'The Wanderings of Cain,' are what they are because they are all subdued to the hues of that heaving and phosphorescent sea below the verge of consciousness from which they have emerged. No single fragment of concrete reality in the array before us is in itself of such far-reaching import as is the sense of that hovering cloud of shadowy presences. For what the teeming chaos of the Note Book gives us is the charged and electrical atmospheric background of a poet's mind."

Some of Lowes' terms are strikingly like those used by Dr. R. W. Gerard in describing the nervous system, which he depicts as a fluid whole, a continual alteration of flowing electrical patterns: "Now, with our discovery of a far more fluid nervous system, one unceasingly active and with neural and electrical messages rippling the whole into dynamic patterns, which flow from one contour to another as present influences play upon the condition left by past ones—with such a picture the arrival of new neural relationships is no great problem."

It is perhaps hard to see how there should be any fixity at all in so fluid a medium. Yet the fact is that there is a great deal of stability, so much that often it interferes with life. It may be that the threat of dissolution is so great that men have developed their conservatism as a necessary guard against the dispersal of the order they live by. Whatever the cause, the tendency to distrust the widest and freest ranging of the mind is so strong that the changes necessary for the development

of human life could not be attained without the efforts of the more daring and ingenious of mankind.

The creative process is not only the concern of specialists, however; it is not limited to the arts and to thought, but is as wide as life. Or perhaps it would be more correct to say that invention in the arts and in thought is a part of the invention of life, and that this invention is essentially a single process. That view is made clear enough in Yeats' poem "Long-Legged Fly," which appears in this volume. The minds of the artist Michelangelo, of Caesar the man of action, and of the nameless girl whose movements are only the apparently trivial motions of life at play are seen to be all in the same condition: their minds move upon silence as the fly moves on the surface of a stream. They are brought into relation, that is to say, with the freer and more plentiful activity which transcends that of the schematic consciousness, the awareness which can be put into words or formed into other systems of signs. They are enlarged. It would not be correct to say that they have yielded to darkness or disorder so long as they remain responsive to the needs of life, to the pressures or tensions developing in the widened psychic activity in consequence of human interests and needs, including those interests and needs which are unsatisfied in the experience organized by current insight. They have yielded to a necessity inherent in their full psychic life.

This self-surrender so familiar to creative minds is nearly always hard to achieve. It calls for a purity of motive that is rarely sustained except through dedication and discipline. Subordination of everything to the whole impulse of life is easier for the innocent and ignorant because they are not so fully aware of the hazards of it or are less impressed by them, and they are not so powerfully possessed by convention. When their life is strong in them they can sometimes surrender themselves to it without effort. But shortly the girl in Yeats' poem will notice that somebody is looking, and then, unless she is very willful and full of disastrous genius, she will sink into convention.

Even when one has recognized the controlling center of life as lying outside the ego and the preoccupations of conscious life and has learned to look away from these, submitting to its guidance may be difficult. Some of the reasons why this is so need no further discussion. Much of the difficulty comes of the slightness and the often doubtful character of the means by which the guidance is asserted. The first intimations are likely to be embodied in apparently trivial things, objects or experiences that in our everyday life would seem to have little importance or none whatever. There are two clues to their real importance: first, the disproportionate or even wholly inex-

plicable satisfaction or excitement which they evoke in the creative worker; and secondly, their power to open his mind inward upon the stir of its own unorganized riches.

This is not to say that all that excites the mind in this way will lead directly to creation. The desired new order implicit in the stir of indeterminate activity cannot be seized in the abstract: it must crystallize in terms of some medium in which the worker is adept. Without craft it will escape. The elements that intimate the way of vital development may or may not be included or emphasized in the crystallization. Almost certainly the New Zealand landscape that evoked a world for Katherine Mansfield found a smaller place in her expression than it would have assumed if she had been a painter. The crystallization may, moreover, be delayed even for a long time, or some accident or obstacle may preclude it.

Yet though the exciting elements may not at first lead to any clear development, their whole aspect is of promise. Henry James describes the germinal trivia from which his stories developed as typically minute and superficially bare, but extraordinarily rich in their intimations of developments to be revealed. The very slightness of such elements is a guard against their taking the focus of attention or forcing a finished pattern upon the mind. On the other hand, it has the disadvantage of making them elusive. One must learn to seize and hold them without insistence, letting them agitate the mind when and as they may and make their own development, relinquishing them as they fade or fail of effect and taking up others to be cherished without attachment in the same way, shaping the expression of the growing insight critically—that is, consciously and rationally, drawing upon all resources of craft and understanding—in so far as that may be done without arresting spontaneous developments, always preserving the stir of the excited mind out of which the development issues.

The concentration of such a state may be so extreme that the worker may seem to himself or others to be in a trance or some similar hypnotic or somnambulistic state. But actually the state of so-called trance so often mentioned as characteristic of the creative process or of stages in it differs markedly from ordinary trance or hypnosis, in its collectedness, its autonomy, its extreme watchfulness. And it seems never to be directly induced. It appears rather to be generated indirectly, to subsist as the characteristic of a consciousness partly unfocused, attention diverted from the too-assertive contours of any particular scheme and dispersed upon an object without complete schematic representation. In short, the creative discipline when successful may generate a trance-like state, but one does not throw oneself into a trance in order to create.

Even in those stages when willed and rational effort is dominant, the creative process is essentially the delicate action of developed life. Tricks, devices, drugs, or disciplines are useful to the inventor only in so far as they support that action or empower the organism that acts. The less the worker needs to depend on external things or circumstances the safer he is from disturbances and disabling accidents. The man who comes to depend on alcohol, or on paper of a specific size, or on some one favored environment in order to get his work done has narrowed his freedom of action and he may be resorting to automatic controls or to magic instead of relying on his skill, ingenuity, and sensitiveness. It is best to avoid idiosyncrasy and to cultivate the central disciplines.

Among the conditions to which every inventor must submit is the necessity for patience. The development desired may have to be waited for, even though its character has been clearly intimated. After the first suggestion which allows anticipation of anything at all, a long gestation may be required. The need for such hidden organic development at some stage of the creative process appears to be universal. It may be completed before the first flash of suggestion that brings the creative development to attention, and the worker may then be able to go on without interruption to the conclusion of his work. William Blake claimed that some of his poetry came without any apparent premeditation, as if dictated to him. But often some period of gestation must follow the first flash of insight. With A. E. Housman it was usually short: a poem ordinarily completed itself by stages within a few hours or days. But long or short, the gestation has to be endured. Bertrand Russell has remarked upon the fruitless effort he used to expend in trying to push his creative work to completion by sheer force of will before he discovered the necessity of waiting for it to find its own subconscious development. The reasonable attitude toward this sometimes embarrassing necessity is illustrated by a famous passage in Henry James's preface to his novel *The American*: "I was charmed with my idea, which would take, however, much working out; and precisely because it had so much to give, I think, must I have dropped it for the time into the deep well of unconscious cerebration: not without the hope, doubtless, that it might eventually emerge from that reservoir, as one had already known the buried treasure to come to light, with a firm iridescent surface a notable increase of weight."

Creation is easier when we learn willingly to submit to it, or even, like James, to find real advantage in it. One gives oneself much trouble by recognizing the limitations of the will in creation. It is interesting to see how often it is related as a primary instrument in much of the creative

process by all kinds of artists and thinkers, from Picasso to John Dewey, a group so large and representative as to leave no doubt that agreement is general. Will belongs to the conscious life only. It is effective in attaining objects in view, but it cannot enable us to move in directions that have not yet been discovered. Will rather tends to arrest the undetermined development, by laying the emphasis of a heightened tension upon whatever is already in mind. When what is required is work to be done on something already defined, such an emphasis is useful. And will is helpful therefore in many matters assisting the creative process. It may help the worker to stick to his discipline. It may sustain his effort to stay at his desk—or to leave it, for the relief of too concentrated attention or for the pursuit of incitements to further spontaneous developments. Or it may make firm his purpose to dismiss the man “from Porlock.”

But even in such apparently conscious matters as organizing a novel or choosing a subject for research or for a poem, the will may do vital damage. In the introduction to her novel *Mrs. Dalloway*, Virginia Woolf describes how she was forced to abandon her attempts at a plan for the book and to go forward without method or theory. Her difficulty arose from the fact that the form or plan of the novel as she knew it, was unsuitable for the expression of her impulse, which therefore was bound to be suppressed by the imposition upon its movements of the known, conventional order, the only one that could be produced by willful labor. This is not to be taken as evidence that planning is detrimental, but only that plan must not be enforced by will. Plan must come as a part of the organic development of a project, either before the details are determined, which is more convenient, or in the midst of their production, which is sometimes confusing.

It is organic need, too, rather than will, that must determine the choice of a subject. Often in this matter will and need do not come into conflict. When they do there should be no question about submitting to the vital necessity. To select a subject against inclination and force the mind to elaborate it is damaging and diminishing. The crux of the problem particularly as it exists in the arts is indicated by T. S. Eliot in his introduction to the *Selected Poems* of Marianne Moore: “For a mind of such agility, and for a sensibility so reticent, the minor subject, such as a pleasant little sand-coloured skipping animal, may be the best release for the major emotions. Only the pedantic literalist could consider the subject-matter to be trivial; the triviality is in himself. We all have to choose whatever subject-matter allows us the most powerful and most secret release; and that is a personal affair.”

But by no means all the creative process is

spontaneous development. Two important stages in it are predominantly conscious and critical, and in these the will properly functions. It is of use in that preliminary labor, or sometimes less burdensome preparation, without which there can be no significant creative activity, and in the work of verification, correction, or revision that ordinarily follows the more radical inventive activity and completes or refines its product.

A great deal of the work necessary to equip and activate the mind for the spontaneous part of invention must be done consciously and with an effort of will. Mastering accumulated knowledge, gathering new facts, observing, exploring, experimenting, developing technique and skill, sensibility, and discrimination, are all more or less conscious and voluntary activities. The sheer labor of preparing technically for creative work, consciously acquiring the requisite knowledge of a medium and skill in its use, is extensive and arduous enough to repel many from achievement.

Creative workers reporting their processes of production often inadvertently conceal the amount of conscious and voluntary work by their failure to stress it or to consider it in much detail, probably because so much of it belongs primarily or even entirely to the special disciplines of the worker's field and is thought of as wholly a matter of craft or technique. It is true that some technical operations are nothing more than that, since they are determined purely by the intrinsic nature of the medium. An example is the rejection of the words "orange" or "month" as rime words in a strictly conventional sonnet because there are no exact rimes for them in English. But if, on the other hand, these words were rejected because as approximate or slant rimes, paired, say, with "forage" and "thump," they would form dissonances destructive of some creative end in view, the process would not be merely technical, though technique would be largely involved. Management of the medium becomes more complex, and the technical processes merge indissolubly with the creative process, as soon as the use of substances and forms begins to be guided by a sense of their sufficiency or insufficiency in formulating insights and attitudes. Though the technical component of such work remains ponderable in itself, it is not completely understandable except as a part of the creative process. And all of it that is not spontaneous, ordinarily a great deal, is part of the conscious and voluntary labor of the creative process.

In a different way, we are led to underestimate the labor of invention by the appearance of the finished product. Freed of every irrelevance, especially the sweat and litter of the workshop, the work of thought or art or ritual stands as the simple formula of a subjective action. The impression it gives of unlabored force is not to be trusted. There are no certain grounds

for disbelieving in the difficulty of any process of invention. Every genuinely creative worker must attain in one way or another such full understanding of his medium and such skill, ingenuity, and flexibility in handling it that he can make fresh use of it to construct a device which, when used skillfully by others, will organize their experience in the way that his own experience was organized in the moment of expanded insight. Among the users of his device may be the inventor himself, who may recover the configurations of his insight in this way, though not the full activity out of which they were crystallized. His device may even fail to remind him of his labor. All finished productions have the simplicity of order, which reveals itself rather than its origins.

Even the most energetic and original mind, in order to reorganize or extend human insight in any valuable way, must have attained more than ordinary mastery of the field in which it is to act, a strong sense of what needs to be done, and skill in the appropriate means of expression. It seems certain that no significant expansion of insight can be produced otherwise, whether the activity is thought of as work or not. Often an untutored beauty appears in the drawings of children, and we rightly prize the best of them because they have wholeness of motive, but they have scarcely the power to open the future for us. For that, the artist must labor to the limit of human development and then take a step beyond. The same is true for every sort of creative worker.

That step beyond is stimulated by labor upon the limits of attainment. The secret developments that we call unconscious because they complete themselves without our knowledge and the other spontaneous activities that go forward without foresight yet in full consciousness are induced and focused by intense conscious effort spent upon the material to be developed or in the area to be illuminated. Though the tension of conscious striving tends to overdetermine psychic activity, to narrow and fix it, such tension gives stimulation and direction to the unconscious activity which goes on after the tension is released. The desired developments are usually delayed for some time, during which presumably something like incubation is going on and attention may be profitably turned to something else. Then without warning the solution or the germinal insight may appear. This was the usual experience of Henri Poincaré and of many others. But though "inspiration" may be produced by such conscious labors, by what Katherine Mansfield called "terrific hard gardening," the procedure is not always successful; problems may remain unsolved, insights undeveloped, no matter how much effort is given to them. Nor is there always even when the procedure is successful a large amount of unconscious development. Long periods of

nating conscious and unconscious activity may be required. When the process is an agonizing, fumbling search, as it was for Thomas Wolfe, some morbid condition may be suspected, such as the hypermnesia which seems to have afflicted him with an assaulting torrent of recalled detail.

The unsearchable insight which we call inspiration is sometimes given wholly at one stroke. Poincaré indicates that for him it was. Henry James reports a somewhat similar experience in writing *The Ambassadors*. Others, like Stephen Spender, begin in considerable uncertainty and find successive clarifications in a sort of continuing inspiration as they go on with their conscious work. This happens with many workers in the arts. Van Gogh and Kuniyoshi tell of making many paintings of the same object in order to develop and refine the insight expressed in representing it. D. H. Lawrence is reported to have written *Lady Chatterley's Lover* three times. This process of reworking is very close to revision, but since it involves repeating virtually the whole process of production it appears more likely to preserve the spontaneous character of the initial attempt. Revision need not lack spontaneity, however, and there would be little in it if it did. It is hard to say whether when Allen Tate added his "wind-leaves refrain" to his "Ode to the Confederate Dead" nearly five years after the first draft of the poem was made, he was continuing the composition of the poem or revising it. Under such circumstances the distinction becomes unreal; the two processes merge.

Although the work that tests, refines, and consolidates what is attained in moments of inspiration is not likely to be, in the arts at least, all conscious calculation, it is largely so. Its object, both in art and in intellectual invention, is to make sure that the product is really serviceable. A work may seem valuable to its creator because of his sense of stirring life and fresh significance while he was producing it. After that excitement is dissipated, its intrinsic value is its only relevant one even to himself. He must find out if it will serve to organize experience in a fresh and full and useful way. To that end he tests it critically. If he finds it is not sound and complete, he may be able to make it so, either by conscious craft or consciously directed research or by a fresh exercise of his whole power to which he has been urged by a critical consciousness of his need. Or he may have to reject the work because he finds it fundamentally wrong or hopelessly vapid, or simply because he is unable to bring to it the necessary spontaneous work to complete it. Shelley, who found his inspiration declining as soon as he began to compose, and who considered the products of reviv-
lifeless stopgaps, left many fragments.

There is much lore about the creative process that I have not heard. Some of it is useful, some not. Whether found

gathered into books, as much of it is, or as scattered items, this material should not be approached as a body of fragments to be tested experimentally for their value in practical guidance and accepted or rejected as they are found useful or not. The caution holds even for the more highly organized material of the following essays, letters, and poems. Some of this material is conflicting. Part of it may have been shaped by individual limitations of the writers. Its authority cannot be regarded as absolute. It is more manageable and meaningful when understood in terms of the general principles by which it should also be tested, and which in turn it should test and illustrate.

Practical guidance can often be deduced from the general principles alone. Most writers find it easier to work in the morning—as one should expect, since then the mind has not been so much incited from without, focused, and fixed. John Peale Bishop recommended going as soon as possible from sleep to the writing desk. On the other hand, A. E. Housman wrote his poems mostly in the afternoon. Others have preferred to do their work at night. How shall we turn such information to guidance unless we understand that the time for work should be that time when the excited mind moves most free of the encumbrance of its consciously supported order? If we cannot because of circumstances choose the best time, we may be able to help ourselves through reducing the schematic fixation that interferes with production. Similar considerations govern our treatment of the problem of inciting unconscious work, or any other problem.

I have emphasized the value of understanding, discipline, and hard work in the creative process. High and sustained achievement demands even more, the concentration of a life. And even that is not all. In the absence of fresh insight, devotion is powerless, and the best technique is meaningless, since it can only repeat mechanically. Invention may be precluded by a distrust of deviation. Every new and good thing is liable to seem eccentric and perhaps dangerous at first glimpse, perhaps more than what is really eccentric, really irrelevant to life. And therefore we must always listen to the voice of eccentricity, within ourselves and in the world. The alien, the dangerous, like the negligible near thing, may seem irrelevant to purpose and yet the call to our own fruitful development. This does not mean that we should surrender to whatever novelty is brought to attention. It does mean that we must practice to some extent an imaginative surrender to every novelty that has even the most tenuous credentials. Because life is larger than any of its expressions, it must sometimes do violence to the forms it has created. We must expect to live the orderly ways we have invented continually conscious of the imminence of change.

Henri Poincaré : MATHEMATICAL CREATION

THE GENESIS of mathematical creation is a problem which should intensely interest the psychologist. It is the activity in which the human mind seems to take least from the outside world, in which it acts or seems to act only of itself and on itself, so that in studying the procedure of geometric thought we may hope to reach what is most essential in man's mind.

This has long been appreciated, and some time back the journal called *L'Enseignement Mathématique*, edited by Laisant and Fehr, began an investigation of the mental habits and methods of work of different mathematicians. I had finished the main outlines of this article when the results of that inquiry were published, so I have hardly been able to utilize them and shall confine myself to saying that the majority of witnesses confirm my conclusions; I do not say all, for when the appeal is to universal suffrage unanimity is not to be hoped.

A first fact should surprise us, or rather would surprise us if we were not so used to it. How does it happen there are people who do not understand mathematics? If mathematics invokes only the rules of logic, such as are accepted by all normal minds; if its evidence is based on principles common to all men, and that none could deny without being mad, how does it come about that so many persons are here refractory?

That not every one can invent is nowise mysterious. That not every one can retain a demonstration once learned may also pass. But that not every one can understand mathematical reasoning when explained appears very surprising when we think of it. And yet those who can follow this reasoning only with difficulty are in the majority: that is undeniable, and will surely not be gainsaid by the experience of secondary-school teachers.

And further: how is error possible in mathematics? A sane mind should not be guilty of a logical fallacy, and yet there are very fine minds who do not trip in brief reasoning such as occurs in the ordinary doings of life, and who are incapable of following or repeating without error the mathematical demonstrations which are longer, but which after all are only an accumulation of brief reasonings wholly analogous to

they make so easily. Need we add that mathematicians themselves are not infallible?

The answer seems to me evident. Imagine a long series of syllogisms, and that the conclusions of the first serve as premises of the following: we shall be able to catch each of these syllogisms, and it is not in passing from premises to conclusion that we are in danger of deceiving ourselves. But between the moment in which we first meet a proposition as conclusion of one syllogism, and that in which we reencounter it as premise of another syllogism occasionally some time will elapse, several links of the chain will have unrolled; so it may happen that we have forgotten it, or worse, that we have forgotten its meaning. So it may happen that we replace it by a slightly different proposition, or that, while retaining the same enunciation, we attribute to it a slightly different meaning, and thus it is that we are exposed to error.

Often the mathematician uses a rule. Naturally he begins by demonstrating this rule; and at the time when this proof is fresh in his memory he understands perfectly its meaning and its bearing, and he is in no danger of changing it. But subsequently he trusts his memory and afterward only applies it in a mechanical way; and then if his memory fails him, he may apply it all wrong. Thus it is, to take a simple example, that we sometimes make slips in calculation because we have forgotten our multiplication table.

According to this, the special aptitude for mathematics would be due only to a very sure memory or to a prodigious force of attention. It would be a power like that of the whist-player who remembers the cards played; or, to go up a step, like that of the chess-player who can visualize a great number of combinations and hold them in his memory. Every good mathematician ought to be a good chess-player, and inversely; likewise he should be a good computer. Of course that sometimes happens; thus Gauss was at the same time a geometer of genius and a very precocious and accurate computer.

But there are exceptions; or rather I err; I can not call them exceptions without the exceptions being more than the rule. Gauss it is, on the contrary, who was an exception. As for myself, I must confess, I am absolutely incapable even of adding without mistakes. In the same way I should be but a poor chess-player; I would perceive that by a certain play I should expose myself to a certain danger; I would pass in review several other plays, rejecting them for other reasons, and then finally I should make the move first examined, having meanwhile forgotten the danger I had foreseen.

In a word, my memory is not bad, but it would be insufficient to make me a good chess-player. Why then does it not fail me in a difficult piece of mathematical reasoning where most chess-

players would lose themselves? Evidently because it is guided by the general march of the reasoning. A mathematical demonstration is not a simple juxtaposition of syllogisms, it is syllogisms *placed in a certain order*, and the order in which these elements are placed is much more important than the elements themselves. If I have the feeling, the intuition, so to speak, of this order, so as to perceive at a glance the reasoning as a whole, I need no longer fear lest I forget one of the elements, for each of them will take its allotted place in the array, and that without any effort of memory on my part.

It seems to me then, in repeating a reasoning learned, that I could have invented it. This is often only an illusion; but even then, even if I am not so gifted as to create it by myself, I myself re-invent it in so far as I repeat it.

We know that this feeling, this intuition of mathematical order, that makes us divine hidden harmonies and relations, can not be possessed by every one. Some will not have either this delicate feeling so difficult to define, or a strength of memory and attention beyond the ordinary, and then they will be absolutely incapable of understanding higher mathematics. Such are the majority. Others will have this feeling only in a slight degree, but they will be gifted with an uncommon memory and a great power of attention. They will learn by heart the details one after another; they can understand mathematics and sometimes make applications, but they cannot create. Others, finally, will possess in a less or greater degree the special intuition referred to, and then not only can they understand mathematics even if their memory is nothing extraordinary, but they may become creators and try to invent with more or less success according as this intuition is more or less developed in them.

In fact, what is mathematical creation? It does not consist in making new combinations with mathematical entities already known. Any one could do that, but the combinations so made would be infinite in number and most of them absolutely without interest. To create consists precisely in not making useless combinations and in making those which are useful and which are only a small minority. Invention is discernment, choice.

How to make this choice I have before explained; the mathematical facts worthy of being studied are those which, by their analogy with other facts, are capable of leading us to the knowledge of a mathematical law just as experimental facts lead us to the knowledge of a physical law. They are those which reveal to us unsuspected kinship between other facts, long known, but wrongly believed to be strangers to one another.

Among chosen combinations the most fertile will of . . . those formed of elements drawn from domains which

apart. Not that I mean as sufficing for invention the bringing together of objects as disparate as possible; most combinations so formed would be entirely sterile. But certain among them, very rare, are the most fruitful of all.

To invent, I have said, is to choose; but the word is perhaps not wholly exact. It makes one think of a purchaser before whom are displayed a large number of samples, and who examines them, one after the other, to make a choice. Here the samples would be so numerous that a whole lifetime would not suffice to examine them. This is not the actual state of things. The sterile combinations do not even present themselves to the mind of the inventor. Never in the field of his consciousness do combinations appear that are not really useful, except some that he rejects but which have to some extent the characteristics of useful combinations. All goes on as if the inventor were an examiner for the second degree who would only have to question the candidates who had passed a previous examination.

But what I have hitherto said is what may be observed or inferred in reading the writings of the geometers, reading reflectively.

It is time to penetrate deeper and to see what goes on in the very soul of the mathematician. For this, I believe, I can do best by recalling memories of my own. But I shall limit myself to telling how I wrote my first memoir on Fuchsian functions. I beg the reader's pardon; I am about to use some technical expressions, but they need not frighten him, for he is not obliged to understand them. I shall say, for example, that I have found the demonstration of such a theorem under such circumstances. This theorem will have a barbarous name, unfamiliar to many, but that is unimportant; what is of interest for the psychologist is not the theorem but the circumstances.

For fifteen days I strove to prove that there could not be any functions like those I have since called Fuchsian functions. I was then very ignorant; every day I seated myself at my work table, stayed an hour or two, tried a great number of combinations and reached no results. One evening, contrary to my custom, I drank black coffee and could not sleep. Ideas rose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination. By the next morning I had established the existence of a class of Fuchsian functions, those which come from the hypergeometric series; I had only to write out the results, which took but a few hours.

Then I wanted to represent these functions by the quotient of two series; this idea was perfectly conscious and deliberate, the analogy with elliptic functions guided me. I asked myself what properties these series must have if they existed, and I

succeeded without difficulty in forming the series I have called theta-Fuchsian.

Just at this time I left Caen, where I was then living, to go on a geologic excursion under the auspices of the school of mines. The changes of travel made me forget my mathematical work. Having reached Coutances, we entered an omnibus to go some place or other. At the moment when I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it, that the transformations I had used to define the Fuchsian functions were identical with those of non-Euclidean geometry. I did not verify the idea; I should not have had time, as, upon taking my seat in the omnibus, I went on with a conversation already commenced, but I felt a perfect certainty. On my return to Caen, for conscience's sake I verified the result at my leisure.

Then I turned my attention to the study of some arithmetical questions apparently without much success and without a suspicion of any connection with my preceding researches. Disgusted with my failure, I went to spend a few days at the seaside, and thought of something else. One morning, walking on the bluff, the idea came to me, with just the same characteristics of brevity, suddenness and immediate certainty, that the arithmetic transformations of indeterminate ternary quadratic forms were identical with those of non-Euclidean geometry.

Returned to Caen, I meditated on this result and deduced the consequences. The example of quadratic forms showed me that there were Fuchsian groups other than those corresponding to the hypergeometric series; I saw that I could apply to them the theory of theta-Fuchsian series and that consequently there existed Fuchsian functions other than those from the hypergeometric series, the ones I then knew. Naturally I set myself to form all these functions. I made a systematic attack upon them and carried all the outworks, one after another. There was one however that still held out, whose fall would involve that of the whole place. But all my efforts only served at first the better to show me the difficulty, which indeed was something. All this work was perfectly conscious.

Thereupon I left for Mont-Valérien, where I was to go through my military service; so I was very differently occupied. One day, going along the street, the solution of the difficulty which had stopped me suddenly appeared to me. I did not try to go deep into it immediately, and only after my service did I again take up the question. I had all the elements and had only to arrange them and put them together. So I wrote out my final memoir at a single stroke and without difficulty.

I shall limit myself to this single example; it is useless to multiply them. In regard to my other researches I would

to say analogous things, and the observations of other mathematicians given in *L'Enseignement Mathématique* would only confirm them.

Most striking at first is this appearance of sudden illumination, a manifest sign of long, unconscious prior work. The rôle of this unconscious work in mathematical invention appears to me incontestable, and traces of it would be found in other cases where it is less evident. Often when one works at a hard question, nothing good is accomplished at the first attack. Then one takes a rest, longer or shorter, and sits down anew to the work. During the first half-hour, as before, nothing is found, and then all of a sudden the decisive idea presents itself to the mind. It might be said that the conscious work has been more fruitful because it has been interrupted and the rest has given back to the mind its force and freshness. But it is more probable that this rest has been filled out with unconscious work and that the result of this work has afterward revealed itself to the geometer just as in the cases I have cited; only the revelation, instead of coming during a walk or a journey, has happened during a period of conscious work, but independently of this work which plays at most a rôle of excitant, as if it were the goad stimulating the results already reached during rest, but remaining unconscious, to assume the conscious form.

There is another remark to be made about the conditions of this unconscious work: it is possible, and of a certainty it is only fruitful, if it is on the one hand preceded and on the other hand followed by a period of conscious work. These sudden inspirations (and the examples already cited sufficiently prove this) never happen except after some days of voluntary effort which has appeared absolutely fruitless and whence nothing good seems to have come, where the way taken seems totally astray. These efforts then have not been as sterile as one thinks; they have set agoing the unconscious machine and without them it would not have moved and would have produced nothing.

The need for the second period of conscious work, after the inspiration, is still easier to understand. It is necessary to put in shape the results of this inspiration, to deduce from them the immediate consequences, to arrange them, to word the demonstrations, but above all is verification necessary. I have spoken of the feeling of absolute certitude accompanying the inspiration; in the cases cited this feeling was no deceiver, nor is it usually. But do not think this is a rule without exception; often this feeling deceives us without being any the less vivid, and we only find it out when we seek to put on foot the demonstration. I have especially noticed this fact in regard to ideas coming to me in the morning or evening in bed while in a semiconscious state.

Such are the realities; now for the thoughts they force upon us. The unconscious, or, as we say, the subliminal self plays an important rôle in mathematical creation; this follows from what we have said. But usually the subliminal self is considered as purely automatic. Now we have seen that mathematical work is not simply mechanical, that it could not be done by a machine, however perfect. It is not merely a question of applying rules, of making the most combinations possible according to certain fixed laws. The combinations so obtained would be exceedingly numerous, useless and cumbersome. The true work of the inventor consists in choosing among these combinations so as to eliminate the useless ones or rather to avoid the trouble of making them, and the rules which must guide this choice are extremely fine and delicate. It is almost impossible to state them precisely; they are felt rather than formulated. Under these conditions, how imagine a sieve capable of applying them mechanically?

A first hypothesis now presents itself: the subliminal self is in no way inferior to the conscious self; it is not purely automatic; it is capable of discernment; it has tact, delicacy; it knows how to choose, to divine. What do I say? It knows better how to divine than the conscious self, since it succeeds where that has failed. In a word, is not the subliminal self superior to the conscious self? You recognize the full importance of this question. Boutroux in a recent lecture has shown how it came up on a very different occasion, and what consequences would follow an affirmative answer.

Is this affirmative answer forced upon us by the facts I have just given? I confess that, for my part, I should hate to accept it. Reëxamine the facts then and see if they are not compatible with another explanation.

It is certain that the combinations which present themselves to the mind in a sort of sudden illumination, after an unconscious working somewhat prolonged, are generally useful and fertile combinations, which seem the result of a first impression. Does it follow that the subliminal self, having divined by a delicate intuition that these combinations would be useful, has formed only these, or has it rather formed many others which were lacking in interest and have remained unconscious?

In this second way of looking at it, all the combinations would be formed in consequence of the automatism of the subliminal self, but only the interesting ones would break into the domain of consciousness. And this is still very mysterious. What is the cause that, among the thousand products of our unconscious activity, some are called to pass the threshold, while others remain below? Is it a simple chance which

fers this privilege? Evidently not; among all the stimuli of our senses, for example, only the most intense fix our attention, unless it has been drawn to them by other causes. More generally the privileged unconscious phenomena, those susceptible of becoming conscious, are those which, directly or indirectly, affect most profoundly our emotional sensibility.

It may be surprising to see emotional sensibility invoked *à propos* of mathematical demonstrations which, it would seem, can interest only the intellect. This would be to forget the feeling of mathematical beauty, of the harmony of numbers and forms, of geometric elegance. This is a true esthetic feeling that all real mathematicians know, and surely it belongs to emotional sensibility.

Now, what are the mathematic entities to which we attribute this character of beauty and elegance, and which are capable of developing in us a sort of esthetic emotion? They are those whose elements are harmoniously disposed so that the mind without effort can embrace their totality while realizing the details. This harmony is at once a satisfaction of our esthetic needs and an aid to the mind, sustaining and guiding. And at the same time, in putting under our eyes a well-ordered whole, it makes us foresee a mathematical law. Now, as we have said above, the only mathematical facts worthy of fixing our attention and capable of being useful are those which can teach us a mathematical law. So that we reach the following conclusion: The useful combinations are precisely the most beautiful, I mean those best able to charm this special sensibility that all mathematicians know, but of which the profane are so ignorant as often to be tempted to smile at it.

What happens then? Among the great numbers of combinations blindly formed by the subliminal self, almost all are without interest and without utility; but just for that reason they are also without effect upon the esthetic sensibility. Consciousness will never know them; only certain ones are harmonious, and, consequently, at once useful and beautiful. They will be capable of touching this special sensibility of the geometer of which I have just spoken, and which, once aroused, will call our attention to them, and thus give them occasion to become conscious.

This is only a hypothesis, and yet here is an observation which may confirm it: when a sudden illumination seizes upon the mind of the mathematician, it usually happens that it does not deceive him, but it also sometimes happens, as I have said, that it does not stand the test of verification; well, we almost always notice that this false idea, had it been true, would have gratified our natural feeling for mathematical elegance.

Thus it is this special esthetic sensibility which plays the

rôle of the delicate sieve of which I spoke, and that sufficiently explains why the one lacking it will never be a real creator.

Yet all the difficulties have not disappeared. The conscious self is narrowly limited, and as for the subliminal self we know not its limitations, and this is why we are not too reluctant in supposing that it has been able in a short time to make more different combinations than the whole life of a conscious being could encompass. Yet these limitations exist. Is it likely that it is able to form all the possible combinations, whose number would frighten the imagination? Nevertheless that would seem necessary, because if it produces only a small part of these combinations, and if it makes them at random, there would be small chance that the *good*, the one we should choose, would be found among them.

Perhaps we ought to seek the explanation in that preliminary period of conscious work which always precedes all fruitful unconscious labor. Permit me a rough comparison. Figure the future elements of our combinations as something like the hooked atoms of Epicurus. During the complete repose of the mind, these atoms are motionless, they are, so to speak, hooked to the wall; so this complete rest may be indefinitely prolonged without the atoms meeting, and consequently without any combination between them.

On the other hand, during a period of apparent rest and unconscious work, certain of them are detached from the wall and put in motion. They flash in every direction through the space (I was about to say the room) where they are enclosed, as would, for example, a swarm of gnats or, if you prefer a more learned comparison, like the molecules of gas in the kinematic theory of gases. Then their mutual impacts may produce new combinations.

What is the rôle of the preliminary conscious work? It is evidently to mobilize certain of these atoms, to unhook them from the wall and put them in swing. We think we have done no good, because we have moved these elements a thousand different ways in seeking to assemble them, and have found no satisfactory aggregate. But, after this shaking up imposed upon them by our will, these atoms do not return to their primitive rest. They freely continue their dance.

Now, our will did not choose them at random; it pursued a perfectly determined aim. The mobilized atoms are therefore not any atoms whatsoever; they are those from which we might reasonably expect the desired solution. Then the mobilized atoms undergo impacts which make them enter into combinations among themselves or with other atoms at rest which they struck against in their course. Again I beg pardon, my comparison is very rough, but I scarcely know how otherwise to make my thought understood.

However it may be, the only combinations that have a chance of forming are those where at least one of the elements is one of those atoms freely chosen by our will. Now, it is evidently among these that is found what I called the *good combination*. Perhaps this is a way of lessening the paradoxical in the original hypothesis.

Another observation. It never happens that the unconscious work gives us the result of a somewhat long calculation *all made*, where we have only to apply fixed rules. We might think the wholly automatic subliminal self particularly apt for this sort of work, which is in a way exclusively mechanical. It seems that thinking in the evening upon the factors of a multiplication we might hope to find the product ready made upon our awakening, or again that an algebraic calculation, for example a verification, would be made unconsciously. Nothing of the sort, as observation proves. All one may hope from these inspirations, fruits of unconscious work, is a point of departure for such calculations. As for the calculations themselves, they must be made in the second period of conscious work, that which follows the inspiration, that in which one verifies the results of this inspiration and deduces their consequences. The rules of these calculations are strict and complicated. They require discipline, attention, will, and therefore consciousness. In the subliminal self, on the contrary, reigns what I should call liberty, if we might give this name to the simple absence of discipline and to the disorder born of chance. Only, this disorder itself permits unexpected combinations.

I shall make a last remark: when above I made certain personal observations, I spoke of a night of excitement when I worked in spite of myself. Such cases are frequent, and it is not necessary that the abnormal cerebral activity be caused by a physical excitant as in that I mentioned. It seems, in such cases, that one is present at his own unconscious work, made partially perceptible to the over-excited consciousness, yet without having changed its nature. Then we vaguely comprehend what distinguishes the two mechanisms or, if you wish, the working methods of the two egos. And the psychological observations I have been able thus to make seem to me to confirm in their general outlines the views I have given.

Surely they have need of it, for they are and remain in spite of all very hypothetical: the interest of the questions is so great that I do not repent of having submitted them to the reader.

Translated by George Bruce Halsted
"Mathematical Creation" from *The Foundations of Science*.

Albert Einstein : LETTER TO JACQUES
HADAMARD

MY DEAR COLLEAGUE:

In the following, I am trying to answer in brief your questions as well as I am able. I am not satisfied myself with those answers and I am willing to answer more questions if you believe this could be of any advantage for the very interesting and difficult work you have undertaken.

(A) The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be "voluntarily" reproduced and combined.

There is, of course, a certain connection between those elements and relevant logical concepts. It is also clear that the desire to arrive finally at logically connected concepts is the emotional basis of this rather vague play with the above mentioned elements. But taken from a psychological viewpoint, this combinatory play seems to be the essential feature in productive thought—before there is any connection with logical construction in words or other kinds of signs which can be communicated to others.

(B) The above mentioned elements are, in my case, of visual and some of muscular type. Conventional words or other signs have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.

(C) According to what has been said, the play with the mentioned elements is aimed to be analogous to certain logical connections one is searching for.

(D) Visual and motor. In a stage when words intervene at all, they are, in my case, purely auditive, but they interfere only in a secondary stage as already mentioned.

(E) It seems to me that what you call full consciousness is a limit case which can never be fully accomplished. This seems to me connected with the fact called the narrowness of consciousness (*Enge des Bewusstseins*).

Remark: Professor Max Wertheimer has tried to investigate the distinction between mere associating or combining of producible elements and between understanding (*org*).

Begreifen); I cannot judge how far his psychological analysis catches the essential point.

With kind regards . . .

Albert Einstein

[Note by Jacques Hadamard] Questions (A), (B), (C) correspond to number 30 of the questionnaire issued by *L'Enseignement Mathématique*: It would be very helpful for the purpose of psychological investigation to know what internal or mental images, what kind of "internal word" mathematicians make use of; whether they are motor, auditory, visual, or mixed, depending on the subject which they are studying.

I have asked question (D) on the psychological type, not in research but in usual thought.

Question (E) corresponds to our number 31: a. Especially in research thought, do the mental pictures or internal words present themselves in the full consciousness or in the fringe-consciousness (such as defined in Wallas's *Art of Thought*, pp. 51, 95 or under the name "antechamber of consciousness" in Galton's *Inquiries into Human Faculty*, p. 203 of the edition of 1883; p. 146 of the edition of 1910)? b. The same question is asked concerning the arguments which these mental pictures or words may symbolize.

"Letter to Jacques Hadamard," from "The Letter of Albert Einstein to M. Hadamard," in *The Psychology of Invention in the Mathematical Field* by Jacques Hadamard.

Wolfgang Amadeus Mozart : A LETTER

WHEN I AM, as it were, completely myself, entirely alone, and of good cheer—say, travelling in a carriage, or walking after a good meal, or during the night when I cannot sleep; it is on such occasions that my ideas flow best and most abundantly. *Whence* and *how* they come, I know not; nor can I force them. Those ideas that please me I retain in memory, and am accustomed, as I have been told, to hum them to myself. If I continue in this way, it soon occurs to me how I may turn this or that morsel to account, so as to make a good dish of it, that is to say, agreeably to the rules of counterpoint, to the peculiarities of the various instruments, etc.

the authenticity of this letter remains in doubt.

All this fires my soul, and, provided I am not disturbed, my subject enlarges itself, becomes methodised and defined, and the whole, though it be long, stands almost complete and finished in my mind, so that I can survey it, like a fine picture or a beautiful statue, at a glance. Nor do I hear in my imagination the parts *successively*, but I hear them, as it were, all at once (*gleich alles zusammen*). What a delight this is I cannot tell! All this inventing, this producing, takes place in a pleasingly dream. Still the actual hearing of the *tout ensemble* is after all the best. What has been thus produced I do not easily forget, and this is perhaps the best gift I have my Divine Maker to thank for.

When I proceed to write down my ideas, I take out of the bag of my memory, if I may use that phrase, what has been previously collected into it in the way I have mentioned. For this reason the committing to paper is done quickly enough, for everything is, as I said before, already finished; and it rarely differs on paper from what it was in my imagination. At this occupation I can therefore suffer myself to be disturbed; for whatever may be going on around me, I write, and even talk, but only of fowls and geese, or of Gretel or Bärbel, or some such matters. But why my productions take from my hand that particular form and style that makes them *Mozartish*, and different from the works of other composers, is probably owing to the same cause which renders my nose so large or so aquiline, or, in short, makes it Mozart's, and different from those of other people. For I really do not study or aim at any originality.

"A Letter," from *Life of Mozart*, by Edward Holmes.

Roger Sessions : THE COMPOSER AND HIS MESSAGE

I HAVE TRIED to point out how intimately our musical impulses are connected with those primitive movements which are among the very conditions of our existence. I have tried to show, too, how vivid is our response to the primitive elements of musical movement.

Is not this the key both to the content of music and to its extraordinary power? These bars from the prelude to

Begreifen); I cannot judge how far his psychological analysis catches the essential point.

With kind regards . . .

Albert Einstein

[Note by Jacques Hadamard] Questions (A), (B), (C) correspond to number 30 of the questionnaire issued by *L'Enseignement Mathématique*: It would be very helpful for the purpose of psychological investigation to know what internal or mental images, what kind of "internal word" mathematicians make use of; whether they are motor, auditory, visual, or mixed, depending on the subject which they are studying.

I have asked question (D) on the psychological type, not in research but in usual thought.

Question (E) corresponds to our number 31: a. Especially in research thought, do the mental pictures or internal words present themselves in the full consciousness or in the fringe-consciousness (such as defined in Wallas's *Art of Thought*, pp. 51, 95 or under the name "antechamber of consciousness" in Galton's *Inquiries into Human Faculty*, p. 203 of the edition of 1883; p. 146 of the edition of 1910)? b. The same question is asked concerning the arguments which these mental pictures or words may symbolize.

"Letter to Jacques Hadamard," from "The Letter of Albert Einstein to M. Hadamard," in *The Psychology of Invention in the Mathematical Field* by Jacques Hadamard.

Wolfgang Amadeus Mozart : A LETTER

WHEN I AM, as it were, completely myself, entirely alone, and of good cheer—say, travelling in a carriage, or walking after a good meal, or during the night when I cannot sleep; it is on such occasions that my ideas flow best and most abundantly. *Whence* and *how* they come, I know not; nor can I force them. Those ideas that please me I retain in memory, and am accustomed, as I have been told, to hum them to myself. If I continue in this way, it soon occurs to me how I may turn this or that morsel to account, so as to make a good dish of it, that is to say, agreeably to the rules of counterpoint, to the peculiarities of the various instruments, etc.

The authenticity of this letter remains in doubt.

All this fires my soul, and, provided I am not disturbed, my subject enlarges itself, becomes methodised and defined, and the whole, though it be long, stands almost complete and finished in my mind, so that I can survey it, like a fine picture or a beautiful statue, at a glance. Nor do I hear in my imagination the parts *successively*, but I hear them, as it were, all at once (*gleich alles zusammen*). What a delight this is I cannot tell! All this inventing, this producing, takes place in a pleasing lively dream. Still the actual hearing of the *tout ensemble* is after all the best. What has been thus produced I do not easily forget, and this is perhaps the best gift I have my Divine Maker to thank for.

When I proceed to write down my ideas, I take out of the bag of my memory, if I may use that phrase, what has been previously collected into it in the way I have mentioned. For this reason the committing to paper is done quickly enough, for everything is, as I said before, already finished; and it rarely differs on paper from what it was in my imagination. At this occupation I can therefore suffer myself to be disturbed; for whatever may be going on around me, I write, and even talk, but only of fowls and geese, or of Gretel or Bärbel, or some such matters. But why my productions take from my hand that particular form and style that makes them *Mozartish*, and different from the works of other composers, is probably owing to the same cause which renders my nose so large or so aquiline, or, in short, makes it Mozart's, and different from those of other people. For I really do not study or aim at any originality.

"A Letter," from *Life of Mozart*, by Edward Holmes.

Roger Sessions : THE COMPOSER AND HIS MESSAGE

I HAVE TRIED to point out how intimately our musical impulses are connected with those primitive movements which are among the very conditions of our existence. I have tried to show, too, how vivid is our response to the primitive elements of musical movement.

Is not this the key both to the content of music and to its extraordinary power? These bars from the prelude to *Tristram*

do not express for us love or frustration or even longing; but they reproduce for us, both qualitatively and dynamically, certain gestures of the spirit which are to be sure less specifically definable than any of these emotions, but which energize them and make them vital to us.

So it seems to me that this is the essence of musical expression. "Emotion" is specific, individual and conscious; music goes deeper than this, to the energies which animate our psychic life, and out of these creates a pattern which has an existence, laws, and human significance of its own. It reproduces for us the most intimate essence, the tempo and the energy, of our spiritual being; our tranquillity and our restlessness, our animation and our discouragement, our vitality and our weakness—all, in fact, of the fine shades of dynamic variation of our inner life. It reproduces these far more directly and more specifically than is possible through any other medium of human communication.

In saying this I do not wish to deny that there is also an associative element in musical expression, or that this has its very definite place in certain types of music. It must be remembered that the emergence of music as an entirely separate art has been, as I have pointed out, of very recent origin; that until the last three hundred years it was always connected with more concrete symbols, whether of the word or the dance. It is but natural, therefore, that this associative element should form a part of the composer's medium. It is, however, I believe, not an essential part, especially since it consists so largely in associations which have their basis in movement. Quiet, lightly contrasted movement, for instance, may be associated with outer as well as inner tranquillity—the light rustling of leaves in the wind, or the movement of a tranquil sea—just as agitated movement may be employed to suggest the storms in nature, as well as the perturbations of the spirit. On the other hand, we meet with associations of a far less essential nature—the tone of the trumpet, for instance, suggesting martial ideas, or certain localisms—folk songs, exotic scales, bizarre instrumental combinations, etc., which are used for the purposes of specific and literal coloring. But one would hardly attach more than a very superficial musical significance to associations of this type. They belong definitely in the sphere of applied art, and when they occur in works of serious import they serve, in conformity with an expressed intention of the composer, in a decidedly subordinate capacity, to direct the listener to more concrete associations than the music, in its essential content, can convey.

The above considerations indicate why a certain type of literary rhapsody seems to the musician quite amateurish and

beside the point, in spite of the fact that musicians themselves—even great ones—have occasionally indulged in it. At best it is a literary production, bearing no real relationship to the music and throwing no real light on its content, but expressing the literary impulses of the author with more or less significance, according to his personality. Thus it is that of three distinguished commentators on Beethoven's Seventh Symphony—all three of them composers, and two of them composers of genius—one finds it a second *Eroica*, another a second *Pastorale*, and the third "the apotheosis of the dance." It must not be forgotten that, for the composer, notes, chords, melodic intervals—all the musical materials—are far more real, far more expressive, than words; that, let us say, a "leading tone" or a chord of the subdominant are for him not only notes, but sensations, full of meaning and capable of infinite nuances of modification; and that when he speaks or thinks in terms of them he is using words which, however obscure and dry they may sound to the uninitiated, are for him fraught with dynamic sense.

So, in trying to understand the work of the composer, one must first think of him as living in a world of sounds, which in response to his creative impulse become animated with movement. The first stage in his work is that of what is generally known by the somewhat shopworn and certainly unscientific term "inspiration." The composer, to use popular language again, "has an idea"—an idea, let me make clear, consisting of definite musical notes and rhythms, which will engender for him the momentum with which his musical thought proceeds. The inspiration may come in a flash, or as sometimes happens, it may grow and develop gradually. I have in my possession photostatic copies of several pages of Beethoven's sketches for the last movement of his "*Hammerklavier Sonata*"; the sketches show him carefully modelling, then testing in systematic and apparently cold-blooded fashion, the theme of the fugue. Where, one might ask, is the inspiration here? Yet if the word has any meaning at all, it is certainly appropriate to this movement, with its irresistible and titanic energy of expression, already present in the theme. The inspiration takes the form, however, not of a sudden flash of music, but a clearly envisaged impulse toward a certain goal for which the composer was obliged to strive. When this perfect realization was attained, however, there could have been no hesitation—rather a flash of recognition that this was exactly what he wanted.

Inspiration, then, is the impulse which sets creation in movement: it is also the energy which keeps it going. The composer's principal problem is that of recapturing it in every phase of his work; of bringing, in other words, the requisite amount of en-

ergy to bear on every detail, as well as, constantly, on his vision of the whole.

This vision of the whole I should call the conception. For the musician this too takes the form of concrete musical materials—perceived, however, not in detail but in foreshortened form. The experience, I believe, is quite different for the mature and experienced composer from what it is for the young beginner. As he grows in practice and imagination it assumes an ever more preponderant role, and appears more and more to be the essential act of creation. It differs from what I have described as “inspiration” only in works of large dimensions which cannot be realized in a short space of time. It arises out of the original inspiration, and is, so to speak, an extension of its logic.

What I have described as inspiration, embodies itself in what is the only true sense of the word “style”; conception, in the only true sense of the word “form.” Neither style nor form, in their essence, are derived from convention; they always must be, and are, created anew, and establish and follow their own laws. It is undeniable that certain periods—and the most fortunate ones—have established clearly defined patterns or standards which give the artist a basis on which to create freely. Our own is not one of these; today the individual is obliged to discover his own language before he has completed the mastery of it. Where such standards exist, however, they retain their vitality only as long as they are in the process of development. After this process has stopped, they wither and die, and can be re-created only by a conscious and essentially artificial effort; since they are produced by a unique and unrecoverable impulse, and are suited only to the content which has grown with them.

After inspiration and conception comes execution. The process of execution is first of all that of listening inwardly to the music as it shapes itself; of allowing the music to grow; of following both inspiration and conception wherever they may lead. A phrase, a motif, a rhythm, even a chord, may contain within itself, in the composer’s imagination, the energy which produces movement. It will lead the composer on, through the force of its own momentum or tension, to other phrases, other motifs, other chords.

. . . Composition is a *deed*, an action, and a genuine action of any kind is, psychologically speaking, the simplest thing in the world. Is not its subjective essence intentness on the deed? The climber in the high mountains is intent on the steps he is taking, on the practical realization of those steps; if he allows his consciousness to dwell even on their implications, his foot may move the fatal half inch too far in the direction of the abyss at his side. The composer working at his music is faced with no such tragic alternatives; but his psychology is not dis-

similar. He is not so much conscious of his ideas as possessed by them. Very often he is unaware of his exact processes of thought till he is through with them; extremely often the completed work is incomprehensible to him immediately after it is finished.

Why? Because his experience in creating the work is incalculably more intense than any later experience he can have from it; because the finished product is, so to speak, the goal of that experience and not in any sense a repetition of it. He cannot relive the experience without effort which seems quite irrelevant. And yet he is too close to it to detach himself to the extent necessary to see his work objectively, and to allow it to exert its inherent power over him.

For this reason I have always profoundly disagreed with the definition made by one of my most distinguished living colleagues who, elaborating Aristotle's famous definition of art, wrote that art on the highest level is concerned with "*der Wiedergabe der inneren Natur*"—literally translated, "the reproduction of inner nature." It seems to me on the contrary, that art is a function, an activity of the inner nature—that the artist's effort is, using the raw and undisciplined materials with which his inner nature provides him, to endow them with a meaning which they do not of themselves possess—to transcend them by giving them artistic form. Is not this what a far greater musician, Beethoven, meant, in the words quoted by Bettina Brentano: "*Rührung passt nur an Frauenzimmer (verzeih 'mir); dem Manne muss Musik Feuer aus dem Geiste schlagen*"—"Emotion is fit only for women—for man, music must strike fire from his mind."

"The Composer and his Message" from "The Composer and His Message" in *The Intent of the Artist*, edited by Augusto Centeno.

Harold Shapero : THE MUSICAL MIND

THE MUSICAL MIND is concerned predominantly mechanism of tonal memory. Before it has absorbed considerable variety of tonal experiences it cannot begin to function in a creative way complex enough to be considered. Though the tonal experiences offered to it at any given

of musical history are subject to change—for example, Bach could not hear the timbre of the saxophone, or the pan-diatonic chordal arrangements of Stravinsky; nor could a modern musician hear the sonorities of the baroque trumpets, or the exact nature of the improvised accompaniments derived from the thorough-bass—the mnemonic methods by which these experiences are retained and later exploited creatively remain the same.

The musical memory, where its physiological functions are intact, functions indiscriminately: a great percentage of what is heard becomes submerged in the unconscious, and is subject to literal recall. The creative portion of the musical mind, however, operates selectively, and the tonal material which it offers up has been metamorphosed, and has become unidentifiable from the material which was originally absorbed. In the metamorphosis which has taken place the original tonal material has become compounded with remembered emotional experiences, and it is this action of the creative unconscious which renders music more than an acoustical series of tones, which gives to music its humanistic aspect.

In our time the musical mind is confronted with a great variety of tonal experiences: an immense historical literature has been accumulated and is constantly performed. It is, then, more difficult than ever before for the creative musician to absorb, select and integrate the materials which will make up his art. How then can he make his task easier? If he re-examines the fundamental nature of musical syntax, which actually involves the effort of understanding in the most profound way the manner in which the creative mind works, he cannot fail to gain a true insight into his artistic powers. There is prevalent the superstition that if the composer devotes too much attention to the analysis of the creative process, a catastrophe results in which his inspiration is destroyed and his art rendered meaningless, and that this meddling with a natural function is a result of over-rationalistic thinking stemming from the modern emphasis on scientific method. It is supposed that in earlier periods artists less preoccupied with this problem of understanding found it easier to produce satisfactory works of art. But there is evidence that the earlier composers were concerned to a greater extent with the mechanisms of the creative mind than are the composers of today. The well-known letter of Mozart in which he describes the methods by which a composition takes shape in his mind demonstrates clearly the degree of his interest in the matter. It is known that one of the few books which he owned was Hume's *Treatise on Human Understanding*, and that Mesmer, the discoverer of hypnotism, was one of his close friends. The following letter by Beethoven

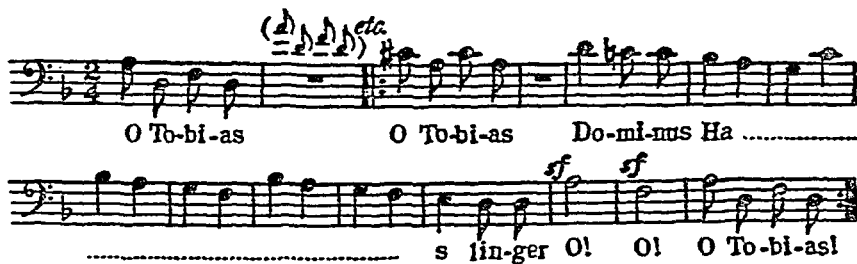
shows that he as well possessed a remarkable insight into the structure of his creative mind:

Baden, Sept. 10, 1821

To Tobias von Haslinger

My very dear friend,

On my way to Vienna yesterday, sleep overtook me in my carriage. . . . While thus slumbering I dreamt that I had gone on a far journey, to no less a place than Syria, on to Judea and back, and then all the way to Arabia, when at length I actually arrived at Jerusalem. The Holy City gave rise to thoughts of the Holy Books. No wonder then if the man Tobias occurred to me, which led me to think of our own little Tobias and our great Tobias. Now during my dream-journey, the following canon came into my head:



But scarcely did I awake when away flew the canon, and I could not recall any part of it. On returning here however, next day, in the same carriage. . . . I resumed my dream-journey, being on this occasion wide awake, when lo and behold! in accordance with the laws of association of ideas [*The use of this phrase is indeed striking.*—H.S.], the same canon flashed across me; so being now awake I held it as fast as Menelaus did Proteus, only permitting it to be changed into three parts. . . .

If the modern composer, in the effort to understand better his creative mind, attempts to re-examine the elements of musical syntax, he must immediately find himself occupied with the nature of melody, for it is the melodic phrase, exactly equivalent to the sentence in the syntax of language, which serves as the primary element in almost any musical structure. By investigating the possibilities of phrase construction and discovering for himself what can be done within a small formal frame the composer not only disciplines his creative unconscious so that the melodic fragments which it offers up possess increased sharpness of contour, but develops at the same time the architectural faculty which will enable him to calculate correctly the time-spaces involved in the manipulation of

musical forms. Haydn, Mozart and Beethoven possessed the greatest mastery of musical phraseology, and it was at that historical period that such a mastery was stylistically most welcome, for the composers who followed soon became interested in subjectifying the tonal material, with the result that continuity established by means of small connected phrase groups broke down and was replaced by the concept of organic form.

If a composer finds himself sympathetic to the classical quality of expression, he can derive immense benefit from a detailed examination of the melodic procedures of the three great Viennese masters. He will find it logical to begin his studies with the trio forms, such as the minuet and scherzo, for these do not demand the complexities of episodic treatment, and present the clearest examples of the simple musical sentence. As a technical exercise he may copy down the soprano line of one of these sentences and attempt to supply the accompanying parts, comparing his result with that of the master. He will find that with practice he is able to duplicate the original accompaniments or supply alternatives which are equally proficient technically. As a further step he may begin writing accompanying parts to soprano lines which he has himself composed in imitation of his models. Gradually his mind will acquire the ability to direct a phrase which starts in the tonic to the dominant, mediant, submediant, or other destinations, as well as to extend it to any desired length. It is then that he will understand that if he focuses his attention on a definite key and beats mentally in a chosen meter, musical images will be set in motion in his mind, and the entire musical texture generated in this way. It is extremely important to practice these exercises in all keys and all rhythms so that the greatest degree of fluency may be attained. The importance of daily practice also cannot be overemphasized, for without it the bridge established between the conscious and the creative unconscious by technical exercise is soon blocked by non-musical associations. Just as the function of daily ritual and prayer, as related to the intuitive realization of deity, is that of preserving the thread of connected thoughts which lead to the intuition itself, so the function of daily technical practice, as related to musical composition, is that of maintaining free the inroad to that corner of the mind from which the music comes.

As the composer continues to work exercises in imitation of his models he will be surprised to find that along with the thousand subtleties of technique he will absorb from his masters, he will discover the personal materials of his own art. These will often be presented to him in dreams, or in the half-waking state of consciousness, before the inner critical faculty has had the opportunity to act in selecting and repressing the given material. From these experiences he will gradually accumulate

the technical stuffs of a private creative world, possessing capabilities of change and expansion according to his expressive needs.

It is not only in our time that composers have been compelled to build this inner world, though the breakdown of the old tonal system and the great diversity of contemporary styles have created this illusion among us. Bach copied zealously the manuscripts of Buxtehude in which he found a point of departure. Beethoven as a young man spoke of the excitement with which he discovered for himself a certain modulatory sequence (I-V of II—II-V of III—III-V of IV—IV, etc.) especially suited for climaxes. It seems to us, as we survey the music of these earlier composers with the comfortable assurance given us by centuries of musical analysis, that they faced problems which were negligible compared with those facing the composers of today, yet each of them discovered technical devices in advance of the theoretical understanding of his time, musical uses which could not be analyzed by his contemporaries.

We are familiar with the efforts of the great modern composers to create technical systems which will provide them with the tools of expression. Schönberg and Hindemith, not satisfied with pointing out the esthetic inevitability of the paths they have chosen, have taken great pains to establish their systems on a scientific basis. They have encountered so many difficulties in reconciling their systems with those of the past that we may assume that they have come into conflict with the natural functions of the musical mind. Though it is true, as they contend, that the creative mentality can be forced to function within an atonal frame (Hindemith's system is less atonal than Schönberg's in its implications, for though it endeavors to support a free chromatic scheme, it is concerned with the binding qualities of intervals and polar tones), it undergoes a considerable warping in the process. It is as if a man were taught to walk with bent knees because of the inordinate lowness of the ceiling. Many of us feel that it is Stravinsky, in the works of his late period, who has best succeeded in organizing the elements of his musical speech, and that the direction he has indicated offers a most important road for future development. It is interesting that he has not felt it necessary to attempt a scientific justification for his diatonic methods, but has relied on the intelligence of his inner ear.

If the composer is to reject systems such as those of Hindemith and Schönberg on the grounds that they conflict with the natural functions of the musical mind, he must be prepared to stand ground as to what can be considered natural functioning. It is evident that inspiration is a most vital component of art. It is through inspired thematic and structural materials that the composer most surely communicates to his listener.

force of his creations, through them that his works possess their greatest chance for survival. In this sense it is possible to consider inspiration the creative absolute. It is certain that inspiration occurs only when the artist is compelled to give something of himself, and when his creative imagination is unhampered by technical procedures unsuited to it. Thus a system of musical materials which fails to lead to inspiration can be considered unnatural, and a system which leads to inspiration can be considered one which insures the natural functioning of the creative mind. The composer can be certain that something has gone wrong with his musical thinking when he loses his inspiration. The composer to whom inspiration is granted can be assured that he is drawing on the most significant creative forces which are available to him. He is in a position to perceive the musical mind in its permanent aspects.

"The Musical Mind" from *Modern Music*, Winter, 1946.

Vincent van Gogh : LETTER TO ANTON
RIDDER VAN RAPPARD

I HAVE BEEN working very hard. I had not made many compositions or studies for a long time, so when I once got started, I became so eager that many a morning I got up at four o'clock. . . .

It must not surprise you that some of my figures are so entirely different from those I make at times when I use models.

I seldom work from memory—I do not practice that kind of thing very much. Besides, I am so used to work with the natural form now and can keep my personal feeling out of it much better than I could at first. I waver less—and just because I am sitting opposite the model, SOMETIMES I FEEL MORE LIKE MYSELF. When I have a model who is quiet and steady and with whom I am acquainted, then I draw repeatedly till there is one drawing that is different from the rest, which does not look like an ordinary study, but more typical and with more feeling. All the same it was made under circumstances similar to those of the others, yet the latter are just studies with less feeling and life in them. This manner of working is like another one, just as plausible. As to *The Little Winter Gardens*, for example, you said yourself they had so much feeling; all right, that was not accidental—I drew them several times and

there was no feeling in them. Then afterwards—after I had done the ones that were so stiff—came the others. It is the same with the clumsy and awkward things. HOW IT HAPPENS THAT I CAN EXPRESS SOMETHING OF THAT KIND? Because the thing has already taken form in my mind before I start on it. The first attempts are absolutely unbearable. I say this because I want you to know that if you see something worth while in what I am doing, it is not by accident but because of real intention and purpose.

I am very much pleased to have you notice that of late I have been trying to express the values of crowds, and that I try to separate things in the dizzy whirl and chaos one can see in each little corner of Nature.

Formerly the light and shade in my studies were mostly arbitrary, at least they were not put down logically, and so they were colder and flatter. When I once get *the feeling of my subject*, and get to know it, I usually draw it in three or more variations—be it a figure or landscape—only I always refer to Nature for every one of them and then I do my best not to put in *any detail*, as the dream quality would then be lost. When Tersteeg or my brother then says to me: "What is that, grass or coal?" I answer: "Glad to hear that you cannot see what it is."

Still it is enough like Nature for the simple peasants of this part of the country. They say: "Yes, that's the hedge of Juffrouw Renese," and: "There are the beanpoles of van der Louw."

Translated by Rela van Messel

"Letter to Anton Ridder van Rappard," from *Letters to an Artist: Vincent van Gogh to Anton Ridder van Rappard*.

Christian Zervos : CONVERSATION WITH PICASSO

LAST WINTER, I was with Picasso at his estate of Boisgeloup, for the purpose of choosing the works reproduced in this number [of *Cahiers d'Art*]. At the moment I had already in mind the examination of art, published in the first number of this year, and I focused my conversation on this subject. Picasso spoke to me simply, but with the emotion which he knows how to put into his words, when he speaks of art (he speaks

it rarely), and which gives to each word a direct sense that transcription cannot preserve.

"I report his ideas here as accurately as my memory made possible on the very evening of my visit to Boisgeloup. They have not been read over by Picasso. To my proposal to show my notes to him, he answered: 'You need not show them to me. The essential, in these times of moral misery, is to create enthusiasm. How many people have read Homer? Nevertheless everyone speaks of him. Thus the Homeric myth has been created. A myth of this kind creates a precious excitation. It is enthusiasm of which we have the most need, we and the young.'

"This conversation by fits and starts is then reproduced here without order or sequence, for fear of involuntarily distorting the sense."

Christian Zervos.

We can make over to fit the artist the quip of the man who said there is nothing more dangerous than instruments of war in the hands of generals. In the same way there is nothing more dangerous than justice in the hands of judges and paint brushes in the hands of the painter! Imagine the danger for a society! But today we haven't the spirit to banish the poets and painters, for we no longer have any idea of the danger of keeping them in the city.

To my distress and perhaps to my delight, I order things in accordance with my passions. What a sad thing for a painter who loves blondes but denies himself the pleasure of putting them in his picture because they don't go well with the basket of fruit! What misery for a painter who detests apples to have to use them all the time because they harmonize with the table cloth! I put in my pictures everything I like. So much the worse for the things—they have to get along with one another.

Heretofore pictures moved toward their completion by progression. Each day brought something new. A picture was a sum of additions. With me, a picture is a sum of destructions. I make a picture, and proceed to destroy it. But in the end nothing is lost; the red I have removed from one part shows up in another.

It would be very interesting to record photographically, not the stages of a painting, but its metamorphoses. One would see perhaps by what course a mind finds its way towards the crystallization of its dream. But what is really very curious is to see that the picture does not change basically, that the initial vision remains almost intact in spite of appearances. I see often a light and a dark, when I have put them in my picture, I do everything I can to 'break them up,' in adding a color that creates a counter effect. I perceive, when this work is photographed, that what I have introduced to correct my first vision

has disappeared, and that after all the photographic image corresponds to my first vision, before the occurrence of the transformations brought about by my will.

The picture is not thought out and determined beforehand, rather while it is being made it follows the mobility of thought. Finished, it changes further, according to the condition of him who looks at it. A picture lives its life like a living creature, undergoing the changes that daily life imposes upon us. That is natural, since a picture lives only through him who looks at it.

When I am working on a picture, I think of a white and apply a white. But I cannot continue to work, think and apply a white; colors, like lineaments, follow the changes of emotion. You have seen the sketch I made of a picture with all the colors indicated. What is left? Still, the white I thought of, the green I thought of are in the picture; but not in the place foreseen, nor in the expected quantity. Naturally pictures can be made out of harmonizing patches, but they will have no dramatic quality.

I want to develop the ability to do a picture in such a way that no one can ever see how it has been done. To what end? What I want is that my picture should evoke nothing but emotion.

Work is a necessity for man.

A horse does not go by itself between the shafts.

Man invented the alarm clock.

At the beginning of each picture there is someone who works with me. Toward the end I have the impression of having worked without a collaborator.

When one begins a picture one often discovers fine things. One ought to beware of these, destroy one's picture, recreate it many times. On each destruction of a beautiful find, the artist does not suppress it, to tell the truth; rather he transforms it, condenses it, makes it more substantial. The issue is the result of rejected discoveries. Otherwise one becomes one's own admirer. I sell myself nothing!

In reality one works with few colors. What gives the illusion of many is that they have been put in the right place.

Abstract art is only painting. And drama?

There is no abstract art. One always has to begin with something. One can then remove all appearance of reality; one runs no risk, for the idea of the object has left an ineffaceable imprint. It is the thing that aroused the artist, stimulated his ideas, stirred his emotions. Ideas and emotions will ultimately be prisoners of his work; whatever they do, they can't escape from the picture; they form an integral part of it, even when their presence is no longer discernible. Whether he likes it or not, man is the instrument of nature; it imposes its character, its appearance, upon him. In my Dinard pictures, as

of Pourville, I expressed almost the same vision. But you have seen yourself how different is the atmosphere of the pictures made in Brittany and in Normandy, since you have recognized the light of the cliffs of Dieppe. I did not copy this light, I didn't pay particular attention to it. I was simply bathed by it; my eyes saw and my subconscious registered their vision; my hand recorded my sensations. One cannot oppose nature. It is stronger than the strongest of men! We have all an interest in being on good terms with her. We can permit ourselves some liberties, but only in detail.

There is not, moreover, a figurative and a nonfigurative art. Everything appears to us in the form of figures. Even in metaphysics ideas are expressed by figures; thus you can understand how absurd it would be to think of painting without images of figures. A person, an object, a circle, are figures; they act upon us more or less intensely. Some are nearer to our sensations, produce emotions which concern our affective faculties; others appeal more especially to the intellect. They must all be accepted, for my spirit has as much need of emotion as my senses. Do you think it interests me that this picture represents two people? These two people once existed, but they exist no longer. The vision of them gave me an initial emotion, little by little their real presence became obscured, they became for me a fiction, then they disappeared, or rather were transformed into problems of all sorts. For me they aren't two people any more, but forms and colors, understand, forms and colors which sum up, however, the idea of the two people and conserve the vibration of their life.

I behave with my painting as I behave with things. I paint a window, just as I look through a window. If this window when open doesn't look good in my picture, I draw a curtain and close it as I would have done in my room. One must act in painting, as in life, directly. Admittedly painting has its conventions, of which it is necessary to take account, since one can't do otherwise. For this reason one must have constantly before one's eyes the very presence of life.

The artist is a receptacle of emotions come from no matter where: from the sky, the earth, a piece of paper, a passing figure, a cobweb. This is why one must not discriminate between things. There is no rank among them. One must take one's good where one finds it, except in one's own works. I have a horror of copying myself, but I have no hesitation, when I am shown for example a portfolio of old drawings, taking from them whatever I want.

When we invented cubism, we had no intention of inventing cubism, but simply of expressing what was in us. Nobody drew up a program of action, and though our friends the followed our efforts attentively, they never dictated to

us. The young painters of today often outline a program for themselves to follow and try to do their assignments correctly like well-behaved schoolboys.

The painter passes through states of fullness and of emptying. That is the whole secret of art. I take a walk in the forest of Fontainebleau. There I get an indigestion of greenness, I must empty this sensation into a picture. Green dominates in it. The painter paints as if in urgent need to discharge himself of his sensations and his visions. Men take possession of it as a means of covering their nakedness a little. They take what they can and as they can. I believe that finally they take nothing, they quite simply cut out a coat to the measure of their own incomprehension. They make in their own image everything from God to the picture. That is why the nail is the undoer of painting. Painting has always some importance, at least that of the man who made it. The day it is bought and hung on the wall it takes on an importance of another kind, and the painting is done for.

The academic teaching about beauty is false. We are deceived, but so well deceived that it is impossible to recover even the shadow of a truth. The beauties of the Parthenon, the Venuses, the Nymphs, the Narcissuses, are so many lies. Art is not the application of a canon of beauty, but what instinct and intellect can conceive independently of the canon. When one loves a woman one doesn't take instruments and measure her, one loves her with desire, and nevertheless everything has been done to introduce the canon even into love. To tell the truth the Parthenon is nothing but a farmhouse with a roof; colonnades and sculptures were added because in Athens there were people who worked and who wanted to express themselves. It is not what the artist does that counts, but what he is. Cézanne would never have interested me if he had lived and thought like Jacques-Emile Blanche, even if the apple he painted had been ten times as beautiful. What interests us is the uneasiness of Cézanne, the real teaching of Cézanne, the torments of van Gogh, that is to say the drama of the man. The rest is false.

Everybody wants to understand painting. Why is there no attempt to understand the song of birds? Why does one love a night, a flower, everything that surrounds a man, without trying to understand it all? While as for painting, one wants to understand. Let it be understood above all that the artist works by necessity, that he is, he too, a least element of the world, to which no more importance should be attached than to so many natural things which charm us but which we do not explain to ourselves. Those who try to explain a picture are most of the time on the wrong track. Gertrude Stein announced to me joyously some time ago that she had at

understood what my picture represented: three musicians. It was a still life!

How would you have a spectator live my picture as I have lived it? A picture comes to me from far off, who knows how far, I divined it, I saw it, I made it, and yet next day I myself don't see what I have done. How can one penetrate my dreams, my instincts, my desires, my thoughts, which have taken a long time to elaborate themselves and bring themselves to the light, above all seize in them what I brought about, perhaps, against my will?

With the exception of some painters who are opening new horizons to painting, the youth of today do not know any more where to go. Instead of taking up our researches in order to react sharply against us, they apply themselves to reanimating the past. Yet the world is open before us, everything is still to be done, and not to be done over again. Why hang on hopelessly to everything that has fulfilled its promise? There are kilometers of painting in the manner of; but it is rare to see a young man working in his own way.

Is there some notion abroad that man can't repeat himself? To repeat is to go against the laws of the spirit, its forward motion.

I am no pessimist, I do not dislike art, for I could not live without devoting all my hours to it. I love it as the whole end of my life. Everything I do in connection with art gives me a tremendous joy. Nevertheless I don't see why everybody busies himself about art, calls it to account, and on the subject gives vent freely to his own folly. The museums are so many lies, the people who occupy themselves with art are for the most part imposters. I don't understand why there should be more prejudices about art in the revolutionary countries than in the backward ones! We have imposed upon the pictures in the museums all our stupidities, our errors, the pretenses of our spirit. We have made poor ridiculous things of them. We cling to myths instead of sensing the inner life of the men who painted them. There ought to be an absolute dictatorship . . . a dictatorship of painters . . . the dictatorship of a painter . . . to suppress all who have deceived us, to suppress the tricksters, to suppress the matter of deception, to suppress habits, to suppress charm, to suppress history, to suppress a lot of other things. But good sense will always carry the day. One ought above all to make a revolution against good sense! The true dictator will always be vanquished by the dictatorship of good sense . . . Perhaps not!

Yasuo Kuniyoshi : EAST TO WEST

IN 1925 and again in 1928 after my pictures had begun to sell we went abroad. There I admired and studied the old masters and traveled widely to see them. I was impressed by French contemporaries, especially for their keen understanding of their medium. I was excited about the things I saw, but in spite of persuasion on the part of Pascin and several other friends to stay longer in France, I was terribly glad to get back to New York. I found much to admire in French painters. There are so many little artists here, so few real painters. There they had so many fine painters.

The trip proved a great stimulus, enlarging my scope and vision. Almost everybody on the other side was painting directly from the object, something I hadn't done all these years. It was rather difficult to change my approach since up to then I had painted almost entirely from imagination and my memories of the past.

Throughout these many years of painting I have practiced starting my work from reality stating the facts before me. Then I paint without the object for a certain length of time, combining reality and imagination.

I have often obtained in painting directly from the object that which appears to be real results at the very first shot, but when that does happen, I purposely destroy what I have accomplished and re-do it over and over again. In other words that which comes easily I distrust. When I have condensed and simplified sufficiently I know then that I have something more than reality.

A word I often use is "felt," the meaning of which I try to get across in my painting. To me it means the realization of facts. For instance when painting a floor I want that floor to be a floor. Whatever object I am painting I try to realize its relation point by point; the relation of myself to the object, and in the same way, point by point, the relation of the object to the background so as to make this object exist in space.

Comments upon the object or the fact of the object are not sufficient elements for a full expression. Each artist has to face the forces of nature and mould them together with his experience in order to create drama. Drama takes on different expressions according to the time and place.

I spend a long time drawing from the object altho

never make a composition in smaller scale no matter how large a canvas I am working on. I start drawing right on the canvas, working very carefully at the beginning for the painting, and develop the drawing until it fully suggests the subject. This enables me to carry on with the painting without the object in front of me.

As time goes on colors take on a new significance. I don't use as many colors as I used to, but try more precisely to paint, in relation to color, so as to produce more color without using many colors. For luminosity I build a darker color on top of a lighter color. I believe in glazing to achieve depth and transparency of color.

I like to start as many canvases as I can during the summer. I carry them to a certain point so that when I start working on them again, usually back in New York in the winter, it means about six months have elapsed since I originally started the canvas. Therefore I sometimes have about a dozen canvases going at the same time. I never paint over, even a small area, if there are changes to be made. Instead I always scrape down to the canvas and rebuild again.

There are numerous problems that beset the artist in his work. Consciously or unconsciously each artist tries to solve them. Lately I have come to the stage where I actually take a problem and try to solve it. For instance I was interested in painting a dark object within the dark. In order to carry this out successfully it may take me several years. Once accomplished to my satisfaction, however, it becomes an integral part of me, enabling me to go on to another problem.

"East to West" from "East to West" in the *Magazine of Art*, February, 1940.

Julian Levi : BEFORE PARIS AND AFTER

I FIND IT rather difficult to write about my own painting. Briefly, I am seeking an integration between what I feel and what I have learned by objective criteria; an integration between the tired experienced eye and the childlike simple perception; but above all I hope to resolve the polarity which exists between an essentially emotional view of nature and a classical, austere sense of design. "In truth, I have painted

by opening my eyes day and night on the perceptible world, and also by closing them from time to time that I might better see the vision blossom and submit itself to orderly arrangement." This quotation from an article by Georges Rouault, which appeared in *Verve*, is to me rich in meaning and summarizes, with Gallic brevity, precisely what I have been driving at.

It seems to me that almost every artist finds some subdivision of nature or experience more congenial to his temperament than any other. To me it has been the sea—or rather those regions adjacent to the sea—beaches, dunes, swampy coasts. I haven't the space to go into the roots of this particular nostalgia but it has been part of my life since early childhood.

As a secondary interest, I cherish the human physiognomy, the painting of people who, for diverse reasons, I find arresting. I seldom find my models among people of superlative beauty or symmetry. I am often fascinated by "brats" of eight or nine with stringy hair and querulous expressions. . . .

In painting the sea coast I have tried to acquire as much objective knowledge of the subject as I possibly could. I know the people of those regions and I have become reasonably familiar with their activities. I have studied their fishing gear, their boats and assorted paraphernalia. I have learned how to sail (very badly, I regret to say) and the techniques of professional fishing. I don't lay great stress on the necessity of this kind of documentation but it does give me the feeling of being more closely related to what I have chosen to paint.

There is another aspect of an artist's choice of his subject matter which I think could be profitably explored. It is that I believe he is affectively related to certain forms and designs. I believe his choice is channeled by the compulsion to find an objective vehicle for inward plastic images. I certainly do not know why, but I am stirred by certain geometrical relationships, certain rectangular forms and arabesques out of which grow particular harmonies and rhythms. In deciding what subject I shall paint I am irresistibly drawn to objects which contain the skeleton of this type of plastic structure. Whether I am spending the summer on Barnegat Bay or on Cape Cod or merely sketching along the Harlem River, I somehow contrive to find the exact set of lines and contours which this inner appetite demands.

I try to remember that painting at its best is a form of communication, that it is constantly reaching out to find response from an ideal and sympathetic audience. This I know is not accomplished by pictorial rhetoric nor by the manipulation of seductive paint surfaces. Nor is a good picture concocted out of theatrical props, beautiful subjects, or memories of

other paintings. All these might astound but they will never communicate the emotional content or exaltation of life, which I believe an artist, by definition, has to accept as his task.

"Before Paris and After" from "Before Paris and After" in the *Magazine of Art*, December, 1940.

Max Ernst : INSPIRATION TO ORDER

IT ALL STARTED on August 10, 1925, by my recalling an incident of my childhood when the sight of an imitation mahogany panel opposite my bed had induced one of those dreams between sleeping and waking. And happening to be at a seaside inn in wet weather I was struck by the way the floor, its grain accentuated by many scrubblings, obsessed my nervously excited gaze. So I decided to explore the symbolism of the obsession, and to encourage my powers of meditation and hallucination I took a series of drawings from the floorboards by dropping pieces of paper on them at random and then rubbing the paper with blacklead. As I looked carefully at the drawings that I got in this way—some dark, others smudgily dim—I was surprised by the sudden heightening of my visionary powers, and by the dreamlike succession of contradictory images that came one on top of another with the persistence and rapidity peculiar to memories of love.

Now my curiosity was roused and excited, and I began an impartial exploration, making use of every kind of material that happened to come into my field of vision: leaves and their veins, frayed edges of sacking, brush strokes in a 'modern' painting, cotton unwound from a cotton-reel, etc., etc. Then I saw human heads, many different beasts, a battle ending in a kiss (*the wind's sweetheart*), rocks, sea and rain, earthquakes, the sphinx in its stable, the small tables round about the earth, Caesar's shoulder-blade, false positions, a shawl covered with flowers of hoar frost, pampas.

The cuts of a whip, trickles of lava, fields of honour, inundations and seismic plants, scarecrows, the edge of the chestnut hood.

Flashes of lightning before one's fourteenth year, vaccinated bread, conjugal diamonds, the cuckoo (origin of the pendulum), the meal of death, the wheel of light.

A solar coinage system.

The habits of leaves, the fascinating cyprus tree.

Eve, the only one remaining to us.

I put the first fruits of the *frottage* process together, from sea and rain to *Eve, the only one remaining to us*, and called it *Natural History*.

I stress the fact that, through a series of suggestions and transmutations arrived at spontaneously like hypnotic visions, drawings obtained in this way lose more and more of the character of the material being explored (wood, for instance). They begin to appear as the kind of unexpectedly clear images most likely to throw light on the first cause of the obsession, or at least to provide a substitute for it.

And so the *frottage* process simply depends on intensifying the mind's capacity for nervous excitement, using the appropriate technical means, excluding all conscious directing of the mind (towards reason, taste, or morals) and reducing to a minimum the part played by him formerly known as the 'author' of the work. The process, in consequence, shows up as a true equivalent of what we now call *automatic writing*. The author is present as a spectator, indifferent or impassioned, at the birth of his own work, and observes the phases of his own development. Just as the poet's place, since the celebrated *Letter of a Clairvoyant*, consists in writing at the dictation of something that makes itself articulate within him, so the artist's role is to gather together and then give out that which makes itself *visible* within him. In devoting myself to this activity (or passivity)—later we called it *paranoic criticism*—and adapting *frottage*, which seemed at first only applicable to drawing, to the technical mediums of painting (for instance, scratching colours on a prepared coloured ground, over an uneven surface), and in trying all the time to reduce still more my own active participation in the making of a picture, so as to widen the active field of the mind's capacity for hallucination, I succeeded in being present *as a spectator* at the birth of all my works after August 10, 1925, the memorable day of the discovery of *frottage*. Being a man of 'ordinary constitution' (to use Rimbaud's terms) I have done my best to *make my soul monstrous*. A blind swimmer, I have made myself clairvoyant. I have *seen*. I have become the amazed lover of what I have seen, wanting to identify myself with it.

In 1930, when I had, with a passion that was yet systematic, composed my book, *The Hundred-headed Woman*, I had an almost daily visit from the *Head of the Birds*, called Loplop, a very special phantom of exceptional faithfulness, who is attached to my person. He presented me with a *heart in a cage, the sea in a cage, two petals, three leaves, a flower and*

a girl; and also the man with the black eggs, and the man with the red cloak. One fine autumn afternoon he told me that one day a Lacedaemonian had been asked to go and hear a man who could imitate the nightingale perfectly. The Lacedaemonian answered: *I have often heard the nightingale itself.* One evening he told me some jokes that were not funny. Joke—it is better not to reward a fine action at all than to reward it badly. A soldier had both arms blown off in battle. His colonel offered him half-a-crown. The soldier said to him: 'I suppose, sir, you think I've only lost a pair of gloves.'

What is the mechanism of collage?

I think I would say that it amounts to the exploitation of the chance meeting on a non-suitable plane of two mutually distant realities (a paraphrase and generalization of the well-known quotation from Lautréamont '*Beautiful as the chance meeting upon a dissecting table of a sewing machine and an umbrella*') or, more simply the cultivation of systematic moving out of place on the lines of André Breton's theory: *Super-reality must in any case be the function of our will to put everything completely out of place (naturally one could go so far as to put a hand out of place by isolating it from an arm, then the hand thereby gains, as a hand; and, what is more, when we speak of putting things out of place we are not thinking only of space.* (Warning to the reader in *The Hundred-headed Woman.*)

A complete, real thing, with a simple function apparently fixed once and for all (an umbrella), coming suddenly into the presence of another real thing, very different and no less incongruous (a sewing machine) in surroundings where both must feel out of place (on a dissecting table), escapes by this very fact from its simple function and its own identity; through a new relationship its false absolute will be transformed into a different absolute, at once true and poetic: the umbrella and the sewing machine will make love. The mechanism of the process seems to me to be laid bare by this very simple example. Complete transmutation followed by a pure act such as the act of love must necessarily occur every time the given facts make conditions favourable: *the pairing of two realities which apparently cannot be paired on a plane apparently not suited to them.* Speaking of the collage process in 1920 Breton wrote:

It is the marvellous capacity to grasp two mutually distant realities without going beyond the field of our experience and to draw a spark from their juxtaposition; to bring within reach of our senses abstract forms capable of the same intensity and enhancement as any others; and, depriving us of any system of reference, to set us

at odds with our own memories. (*Preface to Max Ernst exhibition*, May, 1920.)

The two processes, *frottage* and *collage*, are so alike that without changing much I can use the same words to describe the discovery of the one that I used earlier for the other. One day, in 1919, being in wet weather at a seaside inn, I was struck by the way the pages of an illustrated catalogue obsessed my nervously excited gaze. It was a catalogue of objects for anthropological, microscopic, psychological, mineralogical and paleontological demonstration. I found here united elements such poles apart that the very incongruousness of the assembly started off a sudden intensification of my visionary faculties and a dreamlike succession of contradictory images—double, triple and multiple images coming one on top of the other with the persistence and rapidity peculiar to memories of love, and to the dreams that come between sleeping and waking. These images themselves suggested new ways for them to meet in a new unknown (the plane of unsuitability). All I had to do was to add, either by painting, or drawing, to the pages of the catalogue. And I had only to reproduce obediently what made itself visible within me, a colour, a scrawl, a landscape strange to the objects gathered in it, a desert, a sky, a geological event, a floor, a single line drawn straight to represent the horizon, to get a fixed and faithful image of my hallucination; to transform what had been commonplace of advertising into dramas revealing my most secret desires.

I think I can say without over-statement that surrealism has made it possible for painting to travel in seven league boots miles from Renoir's three apples, Manet's four sticks of asparagus, Derain's little chocolate women, and the cubist's tobacco packet. It has opened up a field of vision limited only by the mind's capacity for nervous excitement. It goes without saying that this has been a great blow to the critics, who are terrified to see the 'author's' importance being reduced to a minimum and the conception of talent abolished. Against them, however, we maintain that surrealist painting is within reach of all those who are attracted by true revelations and who are therefore prepared to help on inspiration and make it work to order.

We have no doubt that by yielding naturally to the business of subduing appearances and upsetting the relationships of 'realities' it is helping, with a smile on its lips, to hasten the general crisis of consciousness due in our time.

Translated by Myfanwy Evans

"Inspiration to Order" from *The Painter's Object*, by Myfanwy Evans.

D. H. Lawrence : MAKING PICTURES

ONE HAS to eat one's own words. I remember I used to assert, perhaps I even wrote it: Everything that can possibly be painted has been painted, every brush-stroke that can possibly be laid on canvas has been laid on. The visual arts are at a dead end. Then suddenly, at the age of forty, I begin painting myself and am fascinated.

Still, going through the Paris picture shops this year of grace, and seeing the Dufys and Chiricos, etc., and the Japanese Ito with his wish-wash nudes with pearl-button eyes, the same weariness comes over me. They are all so would-be, they make such efforts. They at least have nothing to paint. In the midst of them a graceful Friesz flower-piece, or a blotting-paper Laurencin, seems a masterpiece. At least here is a bit of *natural* expression in paint. Trivial enough, when compared to the big painters, but still, as far as they go, real.

What about myself, then! What am I doing, bursting into paint? I am a writer, I ought to stick to ink. I have found my medium of expression; why, at the age of forty, should I suddenly want to try another?

Things happen, and we have no choice. If Maria Huxley hadn't come rolling up to our house near Florence with four rather large canvases, one of which she had busted, and presented them to me because they had been abandoned in her house, I might never have started in on a real picture in my life. But those nice stretched canvases were too tempting. We had been painting doors and window-frames in the house, so there was a little stock of oil, turps and colour in powder, such as one buys from an Italian drogheria. There were several brushes for house-painting. There was a canvas on which the unknown owner had made a start—mud-grey, with the beginnings of a red-haired man. It was a grimy and ugly beginning, and the young man who had made it had wisely gone no further. He only had had no inner compulsion: nothing in him, as far as I was concerned, or if there was anything in him, it had died in, and only a bit of the mud-grey "group" had come

So for the sheer fun of covering a surface and obliterating mud-grey, I sat on the floor with the canvas propped up against a chair—and with my house-paint brushes and colours

in little casseroles. I disappeared into that canvas. It is to me the most exciting moment—when you have a blank canvas and a big brush full of wet colour, and you plunge. It is just like diving into a pond—then you start frantically to swim. So far as I am concerned, it is like swimming in a baffling current and being rather frightened and very thrilled, gasping and striking out for all you're worth. The knowing eye watches sharp as a needle; but the picture comes clean out of instinct, intuition and sheer physical action. Once the instinct and intuition gets into the brush tip, the picture *happens*, if it is to be a picture at all.

At least, so my first picture happened—the one I have called “A Holy Family.” In a couple of hours there it all was, man, woman, child, blue shirt, red shawl, pale room—all in the rough, but, as far as I am concerned, a picture. The struggling comes later. But the picture itself comes in the first rush, or not at all. It is only when the picture has come into being that one can struggle and make it *grow* to completion.

Ours is an excessively conscious age. We *know* so much, we feel so little. I have lived enough among painters and around studios to have had all the theories—and how contradictory they are—rammed down my throat. A man has to have a gizzard like an ostrich to digest all the brass-tacks and wire nails of modern art theories. Perhaps all the theories, the utterly indigestible theories, like nails in an ostrich's gizzard, do indeed help to grind small and make digestible all the emotional and aesthetic pabulum that lies in an artist's soul. But they can serve no other purpose. Not even corrective. The modern theories of art make real pictures impossible. You only get these expositions, critical ventures in paint, and fantastic negations. And the bit of fantasy that may lie in the negation—as in a Dufy or a Chirico—is just the bit that has escaped theory and perhaps saves the picture. Theorise, theorise all you like—but when you start to paint, shut your theoretic eyes and go for it with instinct and intuition.

Myself, I have always loved pictures, the pictorial art. I never went to an art school, I have had only one real lesson in painting in all my life. But of course I was thoroughly drilled in “drawing,” the solid-geometry sort, and the plaster-cast sort, and the pin-wire sort. I think the solid-geometry sort, with all the elementary laws of perspective, was valuable. But the pinwire sort and the plaster-cast light-and-shade sort was harmful. Plaster-casts and pin-wire outlines were always so repulsive to me, I quite early decided I “couldn't draw.” I couldn't draw, so I could never do anything on my own. I did paint jugs of flowers or bread and potatoes, or in a lane, copying from Nature, the result wasn't *drawing*. Nature was more or less of a plaster-cast to

plaster-cast heads of Minerva or figures of Dying Gladiators which so unnerved me as a youth. The "object," be it what it might, was always slightly repulsive to me once I sat down in front of it, to paint it. So, of course, I decided I couldn't really paint. Perhaps I can't. But I verily believe I can make pictures, which is to me all that matters in this respect. The art of painting consists in making pictures—and so many artists accomplish canvases without coming within miles of painting a picture.

I learnt to paint from copying other pictures—usually reproductions, sometimes even photographs. When I was a boy, how I concentrated over it! Copying some perfectly worthless scene reproduction in some magazine. I worked with almost dry water-colour, stroke by stroke, covering half a square-inch at a time, each square-inch perfect and completed, proceeding in a kind of mosaic advance, with no idea at all of laying on a broad wash. Hours and hours of intense concentration, inch by inch progress, in a method entirely wrong—and yet those copies of mine managed, when they were finished, to have a certain something that delighted me: a certain glow of life, which was beauty to me. A picture lives with the life you put into it. If you put no *life* into it—no thrill, no concentration of delight or exaltation of visual discovery—then the picture is dead, like so many canvases, no matter how much thorough and scientific work is put into it. Even if you only copy a purely banal reproduction of an old bridge, some sort of keen, delighted awareness of the old bridge or of its atmosphere, or the image it has kindled inside you, can go over on to the paper and give a certain touch of life to a banal conception.

It needs a certain purity of spirit to be an artist, of any sort. The motto which should be written over every School of Art is: "Blessed are the pure in spirit, for theirs is the kingdom of heaven." But by "pure in spirit" we mean pure in spirit. An artist may be a profligate and, from the social point of view, a scoundrel. But if he can paint a nude woman, or a couple of apples, so that they are a living image, then he was pure in spirit, and, for the time being, his was the kingdom of heaven. This is the beginning of all art, visual or literary or musical: be pure in spirit. It isn't the same as goodness. It is much more difficult and nearer the divine. The divine isn't only good, it is all things.

One may see the divine in natural objects; I saw it to-day, in the frail, lovely little camellia flowers on long stems, here on the bushy and splendid flower-stalls of the Ramblas in Barcelona. They were different from the usual fat camellias, more like gardenias, poised delicately, and I saw them like a vision. So now, I could paint them. But if I had bought a handful, and started in to paint them "from nature," then I should

have lost them. By staring at them I should have lost them. I have learnt by experience. It is personal experience only. Some men can only get at a vision by staring themselves blind, as it were: like Cézanne; but staring kills my vision. That's why I could never "draw" at school. One was supposed to draw what one stared at.

The only thing one can look into, stare into, and see only vision, is the vision itself: the visionary image. That is why I am glad I never had any training but the self-imposed training of copying other men's pictures. As I grew more ambitious, I copied Leader's landscapes, and Frank Brangwyn's cartoon-like pictures, then Peter de Wint and Girtin water-colours. I can never be sufficiently grateful for the series of English water-colour painters, published by the *Studio* in eight parts, when I was a youth. I had only six of the eight parts, but they were invaluable to me. I copied them with the greatest joy, and found some of them extremely difficult. Surely I put as much labour into copying from those water-colour reproductions as most modern art students put into all their years of study. And I had enormous profit from it. I not only acquired a considerable technical skill in handling water-colour—let any man try copying the English water-colour artists, from Paul Sandby and Peter de Wint and Girtin, up to Frank Brangwyn and the impressionists like Brabazon, and he will see how much skill he requires—but also I developed my visionary awareness. And I believe one can only develop one's visionary awareness by close contact with the vision itself: that is, by knowing pictures, real vision pictures, and by dwelling on them, and really dwelling in them. It is a great delight, to dwell in a picture. But it needs a purity of spirit, a sloughing of vulgar sensation and vulgar interest, and above all, vulgar contact, that few people know how to perform. Oh, if art schools only taught that! If, instead of saying: This drawing is wrong, incorrect, badly drawn, etc., they would say: Isn't this in bad taste? isn't it insensitive? isn't that an insentient curve with none of the delicate awareness of life in it?—But art is treated all wrong. It is treated as if it were a science, which it is not. Art is a form of religion, minus the Ten Commandment business, which is sociological. Art is a form of supremely delicate awareness and atonement—meaning at-oneness, the state of being at one with the object. But is the great atonement in delight?—for I can never look on art save as a form of delight.

All my life I have from time to time gone back to paint, because it gave me a form of delight that words can never give. Perhaps the joy in words goes deeper and is for that reason more unconscious. The *conscious* delight is certainly stronger in paint. I have gone back to paint for real pleasure

—and by paint I mean copying, copying either in oils or waters. I think the greatest pleasure I ever got came from copying Fra Angelico's "Flight into Egypt" and Lorenzetti's big picture of the Thebaid, in each case working from photographs and putting in my own colour; or perhaps even more a Carpaccio picture in Venice. Then I *really* learned what life, what powerful life has been put into every curve, every motion of a great picture. Purity of spirit, sensitive awareness, intense eagerness to portray an inward vision, how it all comes. The English water-colours are frail in comparison—and the French and the Flemings are shallow. The great Rembrandt I never tried to copy, though I loved him intensely, even more than I do now; and Rubens I never tried, though I always liked him so much, only he seemed so spread out. But I have copied Peter de Hooch, and Vandyck and others that I forget. Yet none of them gave me the deep thrill of the Italians, Carpaccio, or the lovely "Death of Procris" in the National Gallery, or that "Wedding" with the scarlet legs, in the Uffizi, or a Giotto from Padua. I must have made many copies in my day, and got endless joy out of them.

Then suddenly, by having a blank canvas, I discovered I could make a picture myself. That is the point, to make a picture on a blank canvas. And I was forty before I had the real courage to try. Then it became an orgy, making pictures.

I have learnt now not to work from objects, not to have models, not to have a technique. Sometimes, for a water-colour, I have worked direct from a model. But it always spoils the *picture*. I can only use a model when the picture is already made; then I can look at the model to get some detail which the vision failed me with, or to modify something which I *feel* is unsatisfactory and I don't know why. Then a model may give a suggestion. But at the beginning, a model only spoils the picture. The picture must all come out of the artist's inside, awareness of forms and figures. We can call it memory, but it is more than memory. It is the image as it lives in the consciousness, alive like a vision, but unknown. I believe many people have, in their consciousness, living images that would give them the greatest joy to bring out. But they don't know how to go about it. And teaching only hinders them.

To me, a picture has delight in it, or it isn't a picture. The saddest pictures of Piero della Francesca or Sodoma or Goya, have still that indescribable delight that goes with the real picture. Modern critics talk a lot about ugliness, but I never saw a real picture that seemed to me ugly. The theme may be ugly, there may be a terrifying, distressing, almost repulsive quality, as in El Greco. Yet it is all, in some strange way, *kept up* in the delight of a picture. No artist, even the

gloomiest, ever painted a picture without the curious delight in image-making.

"Making Pictures" from *Assorted Articles*.

Henry Moore : NOTES ON SCULPTURE

IT IS A MISTAKE for a sculptor or a painter to speak or write very often about his job. It releases tension needed for his work. By trying to express his aims with rounded-off logical exactness, he can easily become a theorist whose actual work is only a caged-in exposition of conceptions evolved in terms of logic and words.

But though the nonlogical, instinctive, subconscious part of the mind must play its part in his work, he also has a conscious mind which is not inactive. The artist works with a concentration of his whole personality, and the conscious part of it resolves conflicts, organizes memories, and prevents him from trying to walk in two directions at the same time.

It is likely, then, that a sculptor can give, from his own conscious experience, *clues* which will help others in their approach to sculpture, and this article tries to do this, and no more. It is not a general survey of sculpture, or of my own development, but a few notes on some of the problems that have concerned me from time to time.

Three Dimensions

Appreciation of sculpture depends upon the ability to respond to form in three dimensions. That is, perhaps, why sculpture has been described as the most difficult of all arts; certainly it is more difficult than the arts which involve appreciation of flat forms, shape in only two dimensions. Many more people are 'form-blind' than colour-blind. The child learning to see first distinguishes only two-dimensional shape; it cannot judge distances, depths. Later, for its personal safety and practical needs, it has to develop (partly by means of touch) the ability to judge roughly three-dimensional distances. But having satisfied the requirements of practical necessity most people go no further. Though they may attain considerable accuracy in the perception of flat form, they do

not make the further intellectual and emotional effort needed to comprehend form in its full spatial existence.

This is what the sculptor must do. He must strive continually to think of, and use form in its full spatial completeness. He gets the solid shape, as it were, inside his head—he thinks of it, whatever its size, as if he were holding it completely enclosed in the hollow of his hand. He mentally visualizes a complex form *from all round itself*; he knows while he looks at one side what the other side is like; he identifies himself with its centre of gravity, its mass, its weight; he realizes its volume, as the space that the shape displaces in the air.

And the sensitive observer of sculpture must also learn to feel shape simply as shape, not as description or reminiscence. He must, for example, perceive an egg as a simple single solid shape, quite apart from its significance as food, or from the literary idea that it will become a bird. And so with solids such as a shell, a nut, a plum, a pear, a tadpole, a mushroom, a mountain peak, a kidney, a carrot, a tree-trunk, a bird, a bud, a lark, a ladybird, a bullrush, a bone. From these he can go on to appreciate more complex forms or combinations of several forms.

Brancusi

Since Gothic, European sculpture had become overgrown with moss, weeds—all sorts of surface excrescences which completely concealed shape. It has been Brancusi's special mission to get rid of this overgrowth, and to make us once more shape-conscious. To do this he has had to concentrate on very simple direct shapes, to keep his sculpture, as it were, one-cylindere, to refine and polish a single shape to a degree almost too precious. Brancusi's work apart from its individual value has been of great historical importance in the development of contemporary sculpture. But it may now be no longer necessary to close down and restrict sculpture to the single (static) form unit. We can now begin to open out. To relate and combine together several forms of varied sizes, sections and direction, into one organic whole.

Shells and pebbles—being conditioned to respond to shapes

Although it is the human figure which interests me most deeply, I have always paid great attention to natural forms, such as bones, shells, pebbles, etc. Sometimes, for several years running, I have been to the same part of the sea-shore—but each year a new shape of pebble has caught my eye, which the year before, though it was there in hundreds, I never saw. Out of the millions of pebbles passed in walking along the shore, I choose out to see with excitement only those which

fit in with my existing form interest at the time. A different thing happens if I sit down and examine a handful one by one. I may then extend my form experience more by giving my mind time to become conditioned to a new shape.

There are universal shapes to which everybody is subconsciously conditioned and to which they can respond if their conscious control does not shut them off.

Holes in sculpture

Pebbles show Nature's way of working stone. Some of the pebbles I pick up have holes right through them.

When first working direct in a hard and brittle material like stone, the lack of experience and great respect for the material, the fear of ill-treating it, too often result in relief surface carving, with no sculptural power.

But with more experience the completed work in stone can be kept within the limitations of its material, that is, not be weakened beyond its natural constructive build, and yet be turned from an inert mass into a composition which has a full form existence, with masses of varied sizes and sections working together in spatial relationship.

A piece of stone can have a hole through it and not be weakened—if the hole is of a studied size, shape and direction. On the principle of the arch it can remain just as strong.

The first hole made through a piece of stone is a revelation.

The hole connects one side to the other, making it immediately more three-dimensional.

A hole can itself have as much shape-meaning as a solid mass.

Sculpture in air is possible, where the stone contains only the hole, which is the intended and considered form.

The mystery of the hole—the mysterious fascination of caves in hillsides and cliffs.

Sizes and scale

There is a right physical size for every idea.

Pieces of good stone have stood about my studio for long periods, because, though I've had ideas which would fit their proportions and materials perfectly, their size was wrong.

There is a side to scale not to do with its actual physical size, its measurement in feet and inches—but connected with vision.

A carving might be several times over life size and yet be petty and small in feeling—and a small carving only a few inches in height can give the feeling of huge size and monumental grandeur, because the vision behind it is big. Example.

Michelangelo's drawings or a Massacio madonna—and the Albert Memorial.

Yet actual physical size has an emotional meaning. We relate everything to our own size, and our emotional response to size is controlled by the fact that men on the average are between five and six feet high.

An exact model to one-tenth scale of Stonehenge, where the stones would be less than us, would lose all its impressiveness.

Sculpture is more affected by actual size considerations than painting. A painting is isolated by a frame from its surroundings (unless it serves just a decorative purpose), and so retains more easily its own imaginary scale.

If practical considerations allowed me (cost of material, of transport, etc.) I should like to work on large carvings more often than I do. The average in-between size does not disconnect an idea enough from prosaic everyday life. The very small or the very large take on an added size emotion.

Recently I have been working in the country, where, carving in the open air, I find sculpture more natural than in a London studio, but it needs bigger dimensions. A large piece of stone or wood placed almost anywhere at random in a field, orchard or garden, immediately looks right and inspiring.

Drawing and Sculpture

My drawings are done mainly as a help towards making sculpture—as a means of generating ideas for sculpture, tapping oneself for the initial idea; and as a way of sorting out ideas and developing them.

Also, sculpture compared with drawing is a slow means of expression, and I find drawing a useful outlet for ideas which there is not time enough to realize as sculpture. And I use drawing as a method of study and observation of natural form (drawings from life, drawings of bones, shells, etc.).

And I sometimes draw just for its own enjoyment.

Experience, though, has taught me that the difference there is between drawing and sculpture should not be forgotten. A sculptural idea which may be satisfactory as a drawing always needs some alteration when translated into sculpture.

At one time whenever I made drawings for sculpture I tried to give them as much the illusion of real sculpture as I could—that is, I drew by the method of illusion, of light falling on a solid object. But now I find that carrying a drawing so far that it becomes a substitute for the sculpture either weakens the desire to do the sculpture, or is likely to make the sculpture only a dead realization of the drawing.

I now leave a wider latitude in the interpretation of the drawings I make for sculpture, and draw often in line and flat

tones without the light and shade illusion of three dimensions; but this does not mean that the vision behind the drawing is only two-dimensional.

Abstraction and Surrealism

The violent quarrel between the abstractionists and the surrealists seems to me quite unnecessary. All good art has contained both abstract and surrealist elements, just as it has contained both classical and romantic elements—order and surprise, intellect and imagination, conscious and unconscious. Both sides of the artist's personality must play their part. And I think the first inception of a painting or a sculpture may begin from either end. As far as my own experience is concerned, I sometimes begin a drawing with no preconceived problem to solve, with only the desire to use pencil on paper, and make lines, tones and shapes with no conscious aim; but as my mind takes in what is so produced a point arrives where some idea becomes conscious and crystallizes, and then a control and ordering begins to take place.

Or sometimes I start with a set subject; or to solve, in a block of stone of known dimensions, a sculptural problem I've given myself, and then consciously attempt to build an ordered relationship of forms, which shall express my idea. But if the work is to be more than just a sculptural exercise, unexplainable jumps in the process of thought occur; and the imagination plays its part.

It might seem from what I have said of shape and form that I regard them as ends in themselves. Far from it. I am very much aware that associational, psychological factors play a large part in sculpture. The meaning and significance of form itself probably depends on the countless associations of man's history. For example, rounded forms convey an idea of fruitfulness, maturity, probably because the earth, women's breasts, and most fruits are rounded, and these shapes are important because they have this background in our habits of perception. I think the humanist organic element will always be for me of fundamental importance in sculpture, giving sculpture its vitality. Each particular carving I make takes on in my mind a human, or occasionally animal, character and personality, and this personality controls its design and formal qualities, and makes me satisfied or dissatisfied with the work as it develops.

My own aim and direction seems to be consistent with these beliefs, though it does not depend upon them. My sculpture is becoming less representational, less an outward visual copy, and so what some people would call more abstract; but only because I believe that in this way I can present the human

psychological content of my work with the greatest directness and intensity.

"Notes on Sculpture" from *The Painter's Object*, by Myfanwy Evans.

Mary Wigman : COMPOSITION IN PURE MOVEMENT

CHARGED as I frequently am with "freeing" the dance from music, the question often arises, what can be the source and basic structure of my own dancing. I cannot define its principles more clearly than to say that the fundamental idea of any creation arises in me or, rather, out of me as a completely independent dance theme. This theme, however primitive or obscure at first, already contains its own development and alone dictates its singular and logical sequence. What I feel as the germinal source of any dance may be compared perhaps to the melodic or rhythmic "subject" as it is first conceived by a composer, or to the compelling image that haunts a poet. But beyond that I can draw no parallels. In working out a dance I do not follow the models of any other art, nor have I evolved a general routine for my own. Each dance is unique and free, a separate organism whose form is self-determined.

Neither is my dancing abstract, in intention at any rate, for its origin is not in the mind. If there is an abstract effect it is incidental. On the other hand my purpose is not to "interpret" the emotions. Grief, joy, fear, are terms too fixed and static to describe the sources of my work. My dances flow rather from certain states of being, different stages of vitality which release in me a varying play of the emotions, and in themselves dictate the distinguishing atmospheres of the dances.

I can at this moment clearly recall the origin of my *Festlicher Rhythmus*. Coming back from the holidays, rested, restored by sun and fresh air, I was eager to begin dancing again. When I stepped into the studio and saw my co-workers there waiting for me, I beat my hands together and out of this spontaneous expression of happiness, of joy, the dance developed.

My first tentative attempts to compose were made when I was studying the Dalcroze system. Though I have always had a strong feeling for music it seemed from the very start most natural for me to express my own nature by means of pure movement. Perhaps it was just because there was so much musical work to be done at that time, that all these little dances and dance studies took form without music. A German painter observing my modest experiments advised me to go to Munich and work with Von Laban who was also interested in such dancing. On Laban's system of gymnastics I founded my body technique; and during this period of apprenticeship I continued the gradual evolution of my own work.

After years of trial I have come to realize in a very final way, that for me the creation of a dance to music already written cannot be complete and satisfactory. I have danced with several of the great European orchestras, and to music (always generically dance music) old and new. I have even attempted to work out Hindemith's *Daemon*, and some compositions of Bartok, Kodaly, and other contemporaries. But while music easily evokes in me a dance reaction, it is in the development of the dance that a great divergence so often occurs. For usually a dance idea, a "theme," however inspired, by a state of feeling, or indirectly by music, sets up independent reactions. The theme calls for its own development. It is in working this out that I find my dance parting company with the music. The parallel development of the dance with the already completely worked out musical idea is what I find in most instances to be functionally wrong. Each dance demands organic autonomy.

So I have come gradually to feel my way toward a new re-integration of music with the dance. I do not create a dance and then order music written for it. As soon as I conceive a theme, and before it is completely defined, I call in my musical assistants. Catching my idea, and observing me for atmosphere, they begin to improvise with me. Every step of the development is built up co-operatively. Experiments are made with various instruments, accents, climaxes, until we feel the work has indissoluble unity.

My *Pastorale* was developed in the following way: I came into my studio one day and sank down with a feeling of complete relaxation. Out of a sense of deepest peace and quietude I began slowly to move my arms and body. Calling to my assistants I said, "I do not know if anything will come of this feeling, but I should like a reed instrument that would play over and over again a simple little tune, not at all important, always the same one." Then with the monotonous sound of the little tune, with its gentle lyric suggestion, the whole dance took form. Afterwards we found that it was built on six-

eighths time, neither myself nor the musician being conscious of the rhythm until we came to the end.

The monumental *Totenmal* which we presented in Munich last year was accompanied by a whole orchestra of percussion instruments. During the period of preparation these instruments were handled by dancers. The improvisation of dancing and music was so dovetailed that in the long hours of practice the girls dancing constantly changed places with those making the music. The final result was one of the greatest possible harmony. In group creations, as in my individual work, movement and sound are always evolved together.

Working with a group my effort is to seek out a common feeling. I present the main idea, each one improvises. No matter how wide the range of individuality, I must find some common denominator from these different emanations of personality. Thus, on the rock of basic feeling, I slowly build each structure.

Of course all that I have said here should be accepted as a very personal credo. I do not propose to erect a general system for I am a firm believer in individual freedom. Creative work will always assume new and varying forms. Any profound expression of self for which its creator assumes responsibility in the most complete sense must give authentic impetus to a new or an old idea in art.

"Composition in Pure Movement" from *Modern Music*, January-February, 1946.

John Dryden : DEDICATION OF THE RIVAL-LADIES

THIS WORTHLESS present was designed you long before it was a play; when it was only a confused mass of thoughts, tumbling over one another in the dark; when the fancy was yet in its first work, moving the sleeping images of things towards the light, there to be distinguished, and then either chosen or rejected by the judgment; it was yours, my lord, before I could call it mine. And, I confess, in that first tumult of my thoughts, there appeared a disorderly kind of beauty in some of them, which gave me hope, something, worthy my lord of Orrery, might be drawn from them: But I was then

in that eagerness of imagination, which, by overpleasing fanciful men, flatters them into the danger of writing; so that, when I had moulded it into that shape it now bears, I looked with such disgust upon it, that the censures of our severest critics are charitable to what I thought (and still think) of it myself. . . .

The advantages which rhyme has over blank verse are so many, that it were lost time to name them. . . . But that benefit which I consider most in it, because I have not seldom found it, is, that it bounds and circumscribes the fancy. For imagination in a poet is a faculty so wild and lawless, that, like an high-ranging spaniel, it must have clogs tied to it, lest it outrun the judgment. The great easiness of blank verse renders the poet too luxuriant; he is tempted to say many things, which might better be omitted, or at least shut up in fewer words; but when the difficulty of artful rhyming is interposed, where the poet commonly confines his sense to his couplet, and must contrive that sense into such words, that the rhyme shall naturally follow them, not they the rhyme; the fancy then gives leisure to the judgment to come in, which, seeing so heavy a tax imposed, is ready to cut off all unnecessary expenses. This last consideration has already answered an objection which some have made, that rhyme is only an embroidery of sense, to make that, which is ordinary in itself, pass for excellent with less examination. But certainly, that, which most regulates the fancy, and gives the judgment its busiest employment, is like to bring forth the richest and clearest thoughts.

"Dedication of the Rival-Ladies" from "To the Right Honourable Roger, Earl of Orrery" in *The Works of John Dryden*.

Jean Cocteau : THE PROCESS OF INSPIRATION

OFTEN THE PUBLIC forms an idea of inspiration that is quite false, almost a religious notion. Alas! I do not believe that inspiration falls from heaven. I think it rather the result of a profound indolence and of our incapacity to put to work certain forces in ourselves. These unknown forces work deep within us, with the aid of the elements of daily life, its scenes

and passions, and, when they burden us and oblige us to conquer the kind of somnolence in which we indulge ourselves like invalids who try to prolong dream and dread resuming contact with reality, in short when the work that makes itself in us and in spite of us demands to be born, we can believe that this work comes to us from beyond and is offered us by the gods. The artist is more slumberous in order that he shall not work. By a thousand ruses, he prevents his nocturnal work from coming to the light of day.

For it is at this moment that consciousness must take precedence over the unconscious and that it becomes necessary to find the means which permit the unformed work to take form, to render it visible to all. To write, to conquer ink and paper, accumulate letters and paragraphs, divide them with periods and commas, is a different matter from carrying around the dream of a play or of a book.

"More light" was the last phrase of Goethe. This phrase assumes meaning when one considers the struggle of Goethe against the shadow and that existence which he consecrated to clarifying the least recesses of his being and to repulsing the charm of the dog and the wolf. I bow before certain scenes of *Faust*, Part II, that of the fall of Euphorion, for example, in which Goethe reaches the state of grace, in full possession of himself. It would be inexact to accuse an artist of pride when he declares that his work requires somnambulism. The poet is at the disposal of his night. His role is humble, he must clean house and await its due visitation.

The play that I am producing at the Theatre de l'Œuvre, *The Knights of the Round Table*, is a visitation of this sort. I was sick and tired of writing, when one morning, after having slept poorly, I woke with a start and witnessed, as from a seat in a theater, three acts which brought to life an epoch and characters about which I had no documentary information and which I regarded moreover as forbidding.

Long afterward, I succeeded in writing the play and I divined the circumstances that must have served to incite me.

Translated by Brewster Ghiselin
"The Process of Inspiration" from *Le Foyer des Artistes*.

William Wordsworth : PREFACE TO SECOND
EDITION OF LYRICAL
BALLADS

WHAT IS a Poet? To whom does he address himself? And what language is to be expected from him?—He is a man speaking to men: a man, it is true, endowed with more lively sensibility, more enthusiasm and tenderness, who has a greater knowledge of human nature, and a more comprehensive soul, than are supposed to be common among mankind; a man pleased with his own passions and volitions, and who rejoices more than other men in the spirit of life that is in him; delighting to contemplate similar volitions and passions as manifested in the goings-on of the Universe, and habitually impelled to create them where he does not find them. To these qualities he had added a disposition to be affected more than other men by absent things as if they were present; an ability of conjuring up in himself passions, which are indeed far from being the same as those produced by real events, yet (especially in those parts of the general sympathy which are pleasing and delightful) do more nearly resemble the passions produced by real events, than anything which, from the motions of their own minds merely, other men are accustomed to feel in themselves:—whence, and from practice, he has acquired a greater readiness and power in expressing what he thinks and feels, and especially those thoughts and feelings which, by his own choice, or from the structure of his own mind, arise in him without immediate external excitement. . . .

Not that I always began to write with a distinct purpose formally conceived; but habits of meditation have, I trust, so prompted and regulated my feelings, that my descriptions of such objects as strongly excite those feelings, will be found to carry along with them a *purpose*. If this opinion be erroneous, I can have little right to the name of a Poet. For all good poetry is the spontaneous overflow of powerful feelings: and though this be true, Poems to which any value can be attached were never produced on any variety of subjects but by a man who, being possessed of more than usual organic sensibility, had also thought long and deeply. For our continued influxes of feeling are modified and directed by our

thoughts, which are indeed the representatives of all our past feelings; and as, by contemplating the relation of these general representatives to each other, we discover what is really important to men, so, by the repetition and continuance of this act, our feelings will be connected with important subjects, till at length, if we be originally possessed of much sensibility, such habits of mind will be produced, that, by obeying blindly and mechanically the impulses of those habits, we shall describe objects, and utter sentiments, of such a nature, and in such connection with each other, that the understanding of the reader must necessarily be in some degree enlightened, and his affections strengthened and purified. . . .

I have said that poetry is the spontaneous overflow of powerful feelings: it takes its origin from emotion recollected in tranquillity: the emotion is contemplated till, by a species of reaction, the tranquillity gradually disappears, and an emotion, kindred to that which was before the subject of contemplation, is gradually produced, and does itself actually exist in the mind. In this mood successful composition generally begins, and in a mood similar to this it is carried on. . . .

"Preface to Second Edition of *Lyrical Ballads*" from "Preface" in *Lyrical Ballads, with Other Poems*.

Samuel Taylor Coleridge : PREFATORY NOTE TO KUBLA KHAN

THE FOLLOWING fragment is here published at the request of a poet of great and deserved celebrity, and, as far as the Author's own opinions are concerned, rather as a psychological curiosity, than on the ground of any supposed poetic merits.

In the summer of the year 1797, the Author, then in ill health, had retired to a lonely farm-house between Porlock

This account of the composition of "Kubla Khan" should be compared with another, perhaps earlier, statement by Coleridge: "This fragment with a good deal more, not recoverable, composed in a sort of Reverie brought on by two grains of Opium, taken to check a dysentery, at a Farm House between Porlock and Linton, quarter of a mile from Culbone Church, in the fall of the year 1797."

and Linton, on the Exmoor confines of Somerset and Devonshire. In consequence of a slight indisposition, an anodyne had been prescribed, from the effects of which he fell asleep in his chair at the moment that he was reading the following sentence, or words of the same substance, in "Purchas's Pilgrimage": "Here the Khan Kubla commanded a palace to be built, and a stately garden thereunto. And thus ten miles of fertile ground were inclosed with a wall." The Author continued for about three hours in a profound sleep, at least of the external senses; during which time he has the most vivid confidence, that he could not have composed less than from two to three hundred lines; if that indeed can be called composition in which all the images rose up before him as *things*, with a parallel production of the correspondent expressions, without any sensation or consciousness of effort. On awaking he appeared to himself to have a distinct recollection of the whole, and taking his pen, ink, and paper, instantly and eagerly wrote down the lines that are here preserved. At this moment he was unfortunately called out by a person on business from Porlock, and detained by him above an hour, and on his return to his room, found, to his no small surprise and mortification, that though he still retained some vague and dim recollection of the general purport of the vision, yet, with the exception of some eight or ten scattered lines and images, all the rest had passed away like the images on the surface of a stream into which a stone has been cast, but alas! without the after restoration of the latter!

Then all the charm
Is broken—all that phantom-world so fair
Vanishes, and a thousand circlets spread,
And each mis-shape the other. Stay awhile,
Poor youth! who scarcely dar'st lift up thine eyes—
The stream will soon renew its smoothness, soon
The visions will return! And lo, he stays,
And soon the fragments dim of lovely forms
Come trembling back, unite, and now once more
The pool becomes a mirror.

Yet from the still surviving recollections in his mind, the Author has frequently purposed to finish for himself what had been originally, as it were, given to him Σάμερον ἄδιον ἔστω: but the tomorrow is yet to come.

"Prefatory Note to Kubla Khan" from *The Poetical works of Samuel Taylor Coleridge*.

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માટે રાખી શકાશે.

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